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New Russian Tanks Profiled

94UM0473A Warsaw NOWA TECHNIKA WOJSKOWA in Polish No 5, May 94 pp 1-6

[Article by Tomasz Szulc: "Russia's Modern Tanks"]

[Text] Since the concluding section of this article contains a large number of queries and assumptions, it makes sense to begin with statements that raise no doubt. Already in the 1930s, Soviet tanks were marked by innovation: designers succeeded in finding a compromise between armor, armament, mobility and structural simplicity of these military vehicles.

The greatest fame was won by the T-34, which was the design that gave rise not only to various later versions and modifications, but also to an entire family of military vehicles of successive generations: from T-44 through T-54, to T-55, to T-62.

The current Soviet tank was accepted by the military in 1967 as Model T-64. It was characterized by new solutions that distinguished it from the T-34—T-62 family. The only common feature it had with the latter model was the smooth-bore 115 mm cannon, which actually was soon replaced by a new 125 mm weapon. T-64 was the first tank in the world with automatic cannon loading and a first mass-produced military vehicle with composit frontal armor. It also had a unique engine design.

After T-64, T-72 was accepted for the armory, three years later came T-80, which was the first mass-produced tank in the world with a turbine engine. In subsequent years, modernizations of these three tank types were created, which were similar in range and appearance and were produced equally throughout 1976-85. It was an unprecedented fact, because usually even two types of equipment with such great similarities of purpose and ranges are not produced simultaneously. Western analysts' speculations about the possible reasons for this fact remain inconclusive, and the Russians have kept completely silent on this matter.

Modernization of the tanks involved changes of fire guidance and weapon systems, increase of the engine power, and armor reinforcement. Characteristically, this process involved mutual borrowing and unification of these models. The first versions of T-80 had turrets similar to T-64 (however, in T-72, they were different). The powertrain of the modernized T-80 was an offspring of the T-64 motor, and sometimes it was installed also on new T-64 series. Aiming devices were initially standardized for all the three types of tank, but subsequently a laser range finder appeared on T-64a and later was used also on the remaining types of Soviet tanks. A similar fate was in store for ballistic computers, 2A46 cannon versions and new types of ammunition.

Parallel to modernization of the existing tanks, which produced a large number of series models (T-80 itself appeared in the versions T-80A, 80B, 80BK, 80BV, 80BKV, 80U, 80U1 and 80UD), entirely new designs were also created. This is supported by indirect but strong evidence.

During the 1945-75 period, a large number of prototypes of military vehicles were constructed and tested in the USSR. Often these were experimental vehicles, in many cases odd or unsuccessful, but some of them in their day represented revolutionizing innovations that changed the very concept of an armored vehicle. Some of the prototypes created in the 1960s still have ranges not inferior to equipment produced today! There are grounds to assume that during the three post-war decades, an average of two new tank prototypes were built every year and that there were almost 10 rejected experimental designs to each type actually accepted by the army.

Even if, after 1976, the number of prototypes built decreased by half, the number of new designs was quite impressive. The problem is, however, that these machines were never shown anywhere.

All we know about the "genealogical tree" of Soviet tanks is what their creators were willing to demonstrate to the world: mainly at the tank exhibition in Kubinka, near Moscow. Yet, aside from several prototypes of T-80, there is nothing to see! It does not seem reasonable to conclude from this fact that, for some mysterious reason, the Russians decided suddenly to stop working on tanks. All one is left with is speculation and mysterious, often contradictory information that occasionally appears with regard to new tanks. One could try, though, to check out these rumors by analyzing development trends observed in the Soviet tank industry in the past period.

Armament is one of the main advantages of a tank. The 100-105 mm calibers became widespread after the Second World War and the smooth-bore 115 mm, and 125 mm cannons introduced in the USSR represented a major breakthrough. Similar 120 mm caliber cannons appeared in the West only 15 years later (Leopard II), and became generally used on a wider scale as much as 20 years after the introduction of T-62 and T-64. An increase of the caliber of tank cannons is associated with certain unfavorable side effects: the larger size and weight of the cannon require a bigger turret, and the stronger recoil makes it necessary to increase the weight and dimensions of the tank so as to maintain its stability during the firing. A larger size of the ammunition leads to a reduced number of rounds kept in the tank and makes the loading more difficult.

Nevertheless, the USSR did not give up on building tanks with 122 mm and larger cannons. After the war, JS-4 and T-10 tanks with powerful 122 cannons were produced on a mass scale. They were replaced by T-10M, which until the mid-1960s remained the strongest mass-produced tank in the world. This tank had no official successor, which is explained by the increased fire power

of the cannons of T-64 tanks. However, there are general indications that work on vehicles with even more powerful cannons was never completely stopped.

In a "semi-official" way, self-propelled guns on the T-54 chassis were presented at one time, equipped with rifled 122 mm barrels (SU-122-54) and later with 130 mm caliber. On the other hand, there is no evidence that self-propelled guns were ever built on the T-62 chassis; this tank, despite the euphoria associated with the capabilities of smooth-bore weapons, was equipped with a rifled-bore cannon (even today, the British, for instance, prefer rifled barrels because of their greater accuracy).

The USSR continued to build heavy tanks at the Kirov factory in Leningrad. They were extensively tested and, according to certain sources, at least one type went into mass production. This may seem illogical, because 125mm smooth-bore guns eliminated the need for building heavy tanks. Why then were the majority of T-10 tanks destroyed only after the USSR signed the conventional forces reduction treaty in 1989? (That they were maintained in combat readiness for over 20 years, after their production was discontinued, was kept in strict secrecy.)

A different method for increasing their fire power was found for tanks weighing 40 tons and more: they were equipped with anti-tank guided missiles. Initially, ordinary guided missiles were installed on them (3M6 on T-55 fenders, 9M14 behind T-62 turret), but later specially designed anti-tank guided missiles were tried. By the late 1960s, the IT-1 tank, based on the T-62 model, was still equipped with a DRAKON rail-launch missile, but Model 775 already fired missiles from a general-purpose gun/launcher. This solution proved to be efficient, although prototypes of gun/launchers had unsatisfactory accuracy when used to fire conventional ammunition.

Years of research and development yielded missiles that could be fired from 100-125 mm tank cannons. Designers succeeded even in solving the difficulty of accommodating missiles in the ammunition loader: at the beginning they were made of two parts, adjusted to the dimensions of automatic loading cartridges (the loader connected the two parts before sending them into the gun chamber); later, missiles no longer than standard artillery shell were made.

The first version of 9M112 KOBRA missiles was accepted into the inventorty in 1976 (on T-64B tanks) and somewhat later also on T-80B tanks. This required modernization of the fire guidance system and installation of 9K112 guidance module and GTN-12 radio command transmitter for missile flight correction. KOBRA could destroy tanks within a range of up 4 km with over 80 percent target hit probability. Its target accuracy was greatly reduced when fired from a moving tank, and it was therefore classified as an ambush or defense weapon.

The next missile, 9M119 SVIR, was accepted as an armament in 1984 and had a different guidance system: a laser beam device. Thanks to its design, it did not require assembly of modules before firing (this allowed it to be installed also on T-72 tanks with their two-stroke ammunition feeders). Initially, SVIR differed from KOBRA only by an improved firing accuracy, even from a moving tank, but eventually its speed was increased and the range was expanded to over 5 km. The reinforced ballistic cap of the missile effectively breaks through a tank's armor and only then the shaped-charge head is exploded. An advantage of the new system is the easy incorporation of 9K120 guidance modules into standard tank control system. There is every indication that the future Russian military vehicles will continue to use guided missiles fired from their cannons, though these will certainly be shells of a new generation, probably equipped with an active target-homing devices.

Tank ammunition has also undergone significant evolution. Initially, common high-explosive fragmentation and anti-tank shells were used. Nonrotating VBK-tank high-explosive shells were introduced for destruction of tanks of the M-60 class. The more recent VBK-14 ammunition can already break through multilayer armor, and VBK-29 shells have a reinforced ballistic cap that breaks through a reactive armor. VBK-21B is provided with a shaped-charge uranium insert, greatly increasing the penetrating power of the shell (which may involve so-called reverse cumulative effect). Recently, VBK-27 shell has been presented, which has three successively exploding hollow charges. This shell can break even through a reactive armor installed on sectional shields protecting the basic armor of the tank (in case a military vehicle with this kind of armor is ever created).

According to Soviet instructions, subcaliber penetrator rounds should be used primarily against tanks of the Leopard 2 or Abrams M1 class. Initially, these were VBM-13 shells with carbide cores, but later they were replaced by VBM-17 with a tungsten core, and currently VBM-32 with spent uranium core or its modification is produced with a much more powerful projection load and a finned penetrator with a greatly increased penetrating range. This series of improvements resulted in a continuous increase of kinetic energy and, therefore, the destructive power of these shells.

A series of interesting tank shells of a special type was also created. For instance, the VOF-26 fragmentation grenade features a target-hitting accuracy at least five times as high as that of its predecessors. A shell with a heavy spherical core serves to break through reinforced ceramic laminated armor. A fragmentation shell with proximity fused detonator serves to shoot down helicopters. There is also an artillery shell with a heat detector, which can maneuver and home onto a helicopter, etc.

All this does not mean that the 125mm caliber represents the limit of possibilities. An increased barrel diameter would mean greater energy and weight of the shell and

therefore a stronger destructive power. Apparently, larger caliber guns were already planned for the T-80 tank. A tank with a specially modified turret was in fact on exhibit at Kubinka sometime ago. However, there is no evidence that it was eventually accepted into the inventory. One possible reason could have been the completion of the development of a different method for increasing the killing power of tank cannons: the use of a liquid propellant. Information on this research and development in the USSR is extremely scarce. It is known that this research was started in the 1950s at the request of the Navy, which hoped to equip ships with a central system of distribution of propellants that would be common for all artillery calibers. The introduction of surface-to-surface missiles reduced the value of investing in artillery, but the results of research were considered promising enough to receive a top secret classification. The issue was raised again when it became necessary to find a way of increasing the range of the PION self-propelled guns. From there, it was just a short logical step to tank armaments. Liquid propellant had advantages: a high energy making it possible to exceed the initial limiting speed of 2,000 m/s, the possibility of better accommodation of the ammunition reserve (twice as many can be stored in the dispensing magazine, because no cartridge cases are needed). Important disadvantages of the "liquid gunpowder" is the need to build a complicated lock, airtight dispenser unit, etc. As yet there is no evidence to indicate that such guns have been adopted by the army, but since the mid-1980s, there have been persistent rumors of the presence of chemical engineers from the rocket fuel factories at research centers of tank divisions—and of target tanks shattered to pieces on testing ranges by a single hit.

The armor of Soviet tanks is also evolving. A major contributor to this development is a special scientific research institute—NII Stali [scientific research institute of steel]—that has been working in Moscow for over 50 years. Initially, the institute developed foundry recipes for armor steel, but later also devised new armor geometry. Since the 1950s, despite its name, the steel institute worked also on nonferrous armors and even nonmetallic materials. The institute has created not only a number of concepts of laminated flat armors, but also a unique method for formation of laminated armors with a complicated structure. A very simple technology for production of turrets with a laminated armor, available for export since the early 1980s, even today protects a turret against any 120 m shell.

During the Second World War, the institute created a series of unconventional concepts for protection of tanks against shaped-charge shells (at that time the greatest threat to armor). These included simple metal aprons and nets in special frames (a solution that used was by Israel 30 years later). A most advanced system, which was successfully tested in 1944, included an apparatus for destroying an approaching shaped-charge shell in flight. However this concept was never developed into a mature technology, and ended up in archival storage for several long decades.

Another idea was reactive armor of the tank. An explosion of even a small charge disperses the cumulative energy flow, preventing it from breaking through the tank's armor. The first such protection in the form of metal castings closely adjusted to the turret shape and filled with small explosive charges was developed already for the T-64 tank. The decision makers at the time did not appreciate the potential of the idea, and the project was discontinued. Another attempt was undertaken several years later, but again the project never went further than building and testing of prototypes: in this case, these were standardized "bricks" that could be placed in any spot on the tank. However, the idea was believed to hold so little promise that some of the research participants were even allowed to emigrate abroad. It was only after intelligence sources reported that Israel was trying a new method of tank defense amazingly similar to that developed at the NII Stali that the project went into a high gear. Six months later the EDZ, the official code name given to the protection "bricks," came on the production line.

The T-64 (the BV version of 1982) and T-80BV tanks were the first to receive the reactive armor. Subsequently, it was installed also on T-72 and even on T-55. The new armor protected the tank against all types of modern shaped-charge shells and partly also against core shells, but it had a number of unexpected flaws. The metal casing of the "bricks" proved to be a perfect beam reflector for electromagnetic waves, which greatly increased the tank's radar signature. There were also troubles with deactivation of the vehicles, etc.

A group of NII Stali designers, led by Dr. Rototayev, met this challenge by developing a new generation of reactive armors. It includes a two-layer dynamic protection element (against tandem shaped-charge heads): a ceramic layer protecting against kinetic energy shells, and an internal masking membrane reducing the radar and thermal signature of the vehicle. The armor elements are larger and flatter, they are placed partly on the armor and partly in special recesses on its surface. First tank to receive the new armor on a mass scale was T-80U (in 1986).

Developers returned also to the idea of active defense, to shooting down the approaching anti-tank shells. The first system suitable for practical use was the DROZD complex, tested on several types of tank and produced in a small batch for AD and MD versions of the T-55. It was comprised of a detection and data processing module, placed in a container at the vehicle rear (there was no place for it inside the tank) and two launch units (with four barrels each) on both sides. After target detection, the device fired automatically in the direction of fragmentation shell that detonated the shaped-charge head.

An advanced version of the system was demonstrated in 1993: a block of laser and radar sensors (in the millimeter band) or close surveillance was installed on the tank's turret. Cartridges with fragmentation ammunition to hit approaching shells are also mounted on the turret. The guaranteed system response time makes it possible to destroy the anti-tank howitzer shells and guided missiles, but is too long to capture shells fired from tank cannons. Work to reduce the response time and the device dimensions is continuing, and new system modifications are expected shortly.

An alternative to destroying the enemy shells is interfering with their flight path. This is accomplished by the SHTORA system, which consists of a power and guidance unit weighing, together with the control panel, some 15 kg, and a set of emitters shaped as 350 350 280 mm rectangular parallelepipeds, weighing some 30 kg each. They are installed inside the tank, shielding 20° sectors. The operation principle of interference remains unclear, because, according to Russian sources, the system adopted by the military in 1991 operates in the infrared range. However, there are few anti-tank missiles guided by infrared signals. It is possible that TShU-1-7 Shtora serves to blind the enemy aiming devices turned in the direction of the tank.

Since the late 1980s, US sources have reported the existence of tanks with the LASAR system in the USSR. Supposedly, this system searches the area around the tank with a weak laser pulse and, when the laser beam is reflected from an optical device (the enemy sight), the system generates a powerful laser pulse in that direction. Maybe, this is how SHTORA operates.

Relatively less is known about Soviet fire guidance systems. Contrary to the prevalent opinion, their technical level is dictated less by technical limitations than by a compromise between efficiency, reliability and cost. For instance, the first thermal sight for a tank was created in the USSR already for T-64. However, it was too sensitive and caused almost as much as the tank itself. In addition, according to the Soviet military doctrine for the use of military vehicles, targeted firing at night is possible only within a short range, and for this purpose passive optical sights are sufficient. The installation on most Russian tanks of the LUNA infrared reflectors is also misleading: since the mid-1980s, they have been used only to illuminate the terrain on the march, while, on the combat field, an optical channel amplification of a brush light that does not reveal the tank has been used. The fire control system computers have also evolved. Initially, these were electromechanical devices that partially required manual data input. Subsequently, electronic computers appeared, with the number of sensors increasing every year, and since 1990 digital devices have been offered for export, including even the possibility of automatic data transmission between tanks. The AGAVA fire control system, introduced into mass production, includes not only a brush light amplifier, but also a thermal sight. Recently, infrared reflector has been removed from the turret. Successive technological barriers will be surmounted by continuing modernization of Russian fire control systems. However, these modernizations will not be detectable even by the closest scrutiny of the tank's exterior.

Our analysis of the evolution of the elements of tanks' armament and equipment is validated by the two successive versions of Russian military vehicles declassified in 1993.

The first of these is the current modification of the T-80 tank. It has most of the features of T-80U: a turbine engine with 1250 (or more) horsepowers, second-generation reactive armor, and a 9M119 missile guidance system. Innovations include AGAVA M1 fire control system linked with a new onboard computer, an improved gun stabilization system (probably fully electromechanical) and the new BROD M system for rapid crossing of water bodies. The previous T-80 model could cross streams with depths a little more than 1 m, and for deeper water barriers it was necessary to seal the air openings of the turbine and install on them protective pipes. A separate pipe was provided for gas exhaust. This took time and required that the crew go out of the tank. The BROD system is mounted on latches at the back of the turret. When the latches are opened, it falls by its own weight upon the air openings. A flap on its shield opens automatically, and the tank can cross rivers deeper than 12 m without stopping. Special pipes have to be connected to cross deeper streams. Another apparently minor modernization is the transfer of anti-aircraft machine gun from the turntable on the driver's manhole to one of the two columns beside it. The modification reflects the increased role of the wide-angle driver's sight, which rotates with the hatch. Some earlier T-80 versions had the sight connected to a miniature range finder but at present it is certainly stabilized and serves primarily to detect targets near the vehicle. It is unclear whether the remote servicing capability has been preserved.

Another military vehicle, whose mass production began in 1993, is designated T-90. However, it is not a new tank, but a modernized T-72, or more exactly, a new version of T-72S (with reactive armor and SVIR shell system). The modifications include the second-generation reactive armor on the turret and the cabin front. Large flat armor plates are placed also at the front of the side aprons. T-90 is equipped with AGAVA fire control system and SHTORA system with two radiation sources on both sides of the gun barrel. One notices also a large number of various sensors on the turret, some connected with the Shtora system, and others with the fire control system. The powertrain of T-90, as well as that of the recent T-80 modification, remains unknown. The prototypes were powered with the V-84-1 engine (620 kW), but it was replaced by new engine of a greater power. However, the size indicates that it could not be the 6TDF engine with 810 kW power.

At this point we end our review of the Russian military vehicles that have been revealed until now, and proceed

to issues that still remain a mystery. Various "leaks" indicate that, after T-80, a new tank was adopted by the army and that more than 500 units had been built prior to 1992. The fact that it is kept secret should not be surprising, considering that, in the past, new Russian tanks were "revealed" at military parades in Moscow or when they were provided to Soviet army units in the German Democratic Republic. It is possible that the secrecy is not intentional, because already around 1985 a US satellite photographed tanks with turrets of a new shape on a test range. These could have been self-propelled cannons of a new generation, but no less likely is that it was the testing of a next generation of tanks. Likewise, the exhibit at Kubinka included a tank with an unusual turret, but the lack of photographs makes it impossible at this point to verify this information.

There has been also much talk in the past of a tank with a two-man crew: the CIA presented its pictures in a turretless configuration, with a remotely serviced cannon on a strong-armored deck. This is not an unrealistic image. An indirect confirmation that the Russians are interested in such a concept is provided by the fact that no single prototype with this arrangement was presented at Kubinka. The Russians have tested in the past all configurations developed in the West, and years of research in automatic cannon loading should have facilitated work which has been successfully realized in several nations since the mid-1980s. Could it be that no information on it was provided precisely because this was the subject of a great current interest?

An alternative to a turretless vehicle could be a machine similar to the experimental "775" tank with two crew members in the turret (with the driver sitting in a cabin constantly maintained in a steady position regardless of the turret tilt). If this somewhat complicated concept were to be implemented in T-80, it would become a half-meter lower an 5-10 tons lighter.

The Soviet military press recently touched upon the subject of modular military vehicle with a standardized chassis that could accommodate all kinds of powertrains and fire sections of a tank, tank destroyer, self-propelled cannon, and even a heavy armored personnel carrier (the subject disappeared from the pages of these publications with a surprising speed). Designers have an extensive experience in this area considering the standardization of BMP-3, TOR system, Tunguska, BUK and various types of auxiliary vehicles.

Finally, a highly practical, though mysterious question. One of the consequences of the dissolution of the USSR was a difficult situation in which the production of a new tank in Ukraine found itself. Named the Kharkov Monster (Kharkov factories produce T-80U), it was said that its future is difficult to predict because Ukraine can produce the vehicle, but the weapons are manufactured only in Russia. Only an improvement of relations between the former republics of the USSR could change the situation: Ukraine would not be able to finance the project, and Russia would not want to deprive of contracts its factories in St. Petersburg, Omsk, Nizhniy Tagil and elsewhere.

We will be able to verify these conjectures when a new series of Kubinka exhibits are declassified. We will try to report these new developments to our readers without delay, possibly in the form of an addendum to the present article.

Specifications of the Tanks T-80 and FMBT*

	T-80	T-80BV	T-80U	FMBT
Crew	3	3	3	3
Weight, t	42.2	44.5	46	50
Engine	GTD1000	GTD1000TF	GTD1250	LV100+
Power, kW	730	810	920	1300
Rel. power, kW/t	17.2	18.2	20	26
Length, mm	9651	9656	9656	9116
Width, mm	2284	3582	3589	3912
Height, mm	2215	2219	2202	2515
Clearance, mm		451	446	432
Range, km		370**	450**	800***
Cannon	2A46-2	2A46M	2A46M1	
Caliber, mm	125	125	125	120
Ammunition, units	38	38	45	63
Stabilizer	2E26	2E26M	2E42	
Computer	1V517	1V517M	1V528	
Fire control system	1A33	1A33	1A45	
Production year	1978	1983	1987	2010(?)

Footnotes

*FMBT: the tank project for the US army, revealed in 1994, planned for the 21st century. Its projected range and dimensions are highly similar to the data for T-80 (much more than the features of the Abrams tank).

** Without additional fuel tanks.

***With additional fuel tanks.

AIR, AIR DEFENSE FORCES

1st Aerial Refueling of SU-24M

94UM0550A Moscow KRASNAYA ZVEZDA in Russian 9 Aug 94 p 1

[Article by Aleksandr Manushkin: "Tactical Bombers Refuel in Air"]

[Text] As was reported to KRASNAYA ZVEZDA at the tactical aviation staff of the Air Forces, aviation-regiment commander Colonel Vladimir Ivanov performed the first-ever in-flight refueling of the Su24M supersonic bomber in the Far East.

Aerial refueling is the most difficult type of combat training. Despite the shortage of aviation fuel, spare parts and expendable materials, in the summer training period military pilots are continuing to improve their combat proficiency. Aviators of the division headed by Major-General of Aviation Aleksandr Kopytov have mastered aerial refueling. In a number of regiments, practical bombing and launches of air-to-ground guided missiles have been conducted (against naval and ground targets).

Votintsev: Air Defense System

94UM0508A Moscow VOYENNO-ISTORICHESKIY ZHURNAL in Russian No 9, 1993 pp 26-38

[Article by Col-Gen (Ret) Yu.V. Votintsev: "Unknown Troops of the Vanished Superpower"]

[Text]

In Combat With Intruder Aircraft

In the spring of 1959, the commander in chief of the National Air Defense Forces, Marshal of the Soviet Union S.S. Biryuzov, inspected the Separate Turkestan Air Defense Corps. The corps was considered non-combat ready. The commander was relieved of his duties. S.S. Biryuzov from Tashkent called his first deputy, Marshal of Artillery N.D. Yakovlev[1], and ordered that he formalize my appointment to the position of commander of this corps within three days.

The first meeting with the command of the large unit made an oppressive impression on me. The chief of staff and chiefs of the branches of troops had poor knowledge of the state of affairs in the units and subunits and did not have control of the situation. It took me two months to become familiar with the units, including with personnel of individual radar companies at the Pamir stationed along the Osh-Khorog road at elevations from 3,000 to 5,000 meters. I concluded that the effective strength of the corps deployed on the country's southern borders was not capable of accomplishing the assigned missions.

In one year I managed to completely revitalize and strengthen the corps supervisory personnel, mainly through the best officers from the special-purpose army. They helped to put order in the subunits and units. Only one unit evoked a feeling of satisfaction in me—the 9th Guards Fighter Regiment in Andizhan, which was commanded by Lieutenant Colonel Goryunov. The first regiment of Soviet aces scrupulously preserved combat traditions and successfully carried out combat training missions; the pilots vigilantly stood alert duty. But one episode that we touched upon in a conversation with the regiment commander pricked up my ears...

The radar company, located in Andizhan together with the regiment, had the only new, for those times, P-30 radar. Approximately a year and a half before my appointment, it was an operator of this radar who detected an airborne target at an altitude of 20,000 meters. Goryunov launched a fighter with an experienced pilot—a squadron commander. After climbing to the maximum altitude for the MiG-19—17,000 meters, the pilot reported that observed the cruciform configuration of an aircraft approximately 3,000 meters above him. After this incident, the commander of fighter aviation of the National Air Defense Forces, Colonel-General of Aviation Ye.Ya. Savitskiy[2], arrived at the regiment. He talked with the pilot, analyzed all data about the overflight of the mysterious aircraft, and came to the same conclusion as the experts from the General Staff at the command post of the special-purpose army near Moscow in 1957: there cannot be such an aircraft. The pilot from the regiment was immediately transferred. I could not meet with him.

I had already developed a different opinion, but could not confirm it factually. In 1959, I submitted to the commander in chief a report on the need to renovate the corps equipment and armament. I soon received a reply that my request had been included in the plan and that deliveries would be made in 1961-1962. However, reality changed these plans.

On 9 April 1960, in the vicinity of the Pamir, a foreign aircraft was flying over from the direction of Pakistan. "Due to a criminal lack of concern, radar posts of the Separate Turkestan Air Defense Corps detected the intruder at 4:47, after it had penetrated more than 250 km into our territory"—this is a quotation from the materials of the commission of the commander in chief of the National Air Defense Forces investigating the violation of the state border. Actually, the company's radar, badly placed east of Khorog, could not have detected the aircraft due to returns on the screen from

local mountains. Stable tracking of the aircraft began to be accomplished by the Kara-Kul company detectors positioned to the north. At this time I was located at the corps command post, and when the route of the intruder was put on the plotting board, I launched four MiG-19 fighters from the Andizhan airfield. Despite the vectoring, the interceptors, brought to an altitude of 16,000 meters, did not detect the target.

Later on, the intruder made several passes with impunity over a range of the National Air Defense Forces in the vicinity of Lake Balakhash. At that time there were no combat missiles at the launch site where the new S-75 surface-to-air missile [SAM] system was being tested. The chief of the range, Lieutenant-General of Artillery S.D. Dorokhov[3], had not had time to deliver them from the technical base located 80 km away. The aircraft turned around, flew around the Baykonur Test Range, and departed for the border via Mary. The aircraft intruder was located over our territory for at total of six hours and 48 minutes. Neither the air defense corps nor the 73d Air Army had either the forces or assets to put a stop to this violation that was unprecedented in length. I was informed from the central command post of the National Air Defense Forces that the commander in chief stood at the plotting board in silence for six hours. Only twice did S.S. Biryuzov demand my personal confirmation that the intruder's altitude was remaining unchanged—20,000-21,000 meters, which he also reported to the minister of defense. As the intruder approached the state border, I did not rule out the possibility that it would descend. I reported this to S.S. Biryuzov and received authorization to send a pair of MiG-17's to catch up with the violation of Iran's border. The commander of the fighter regiment, Lieutenant Colonel P.Ye. Kuzin[4], tasked two pilots to fly to the border and, if the intruder descended, destroy it, using a ram if necessary. Two MiG-17's went 250-300 km beyond the border, but the intruder did not descend and was not detected. The aircraft returned to the Mary-2 airfield with difficulty, on nearly empty tanks. After my report, S.S. Biryuzov said that I and the others responsible would be punished severely by the minister of defense for missing the spy aircraft conducting reconnaissance of our most secret ranges. And he added: "Do not lose heart. In air defense, one who has been flogged is worth not two, but a dozen who have not. Remember this."

Incidentally, the government of Iran did not make any statements concerning the border violation by our fighters.

By order of the minister of defense, I was warned about incomplete duty compliance. While pondering what needed to be done to prevent such violations, on 1 May 1960 another aircraft was detected approaching the state border at the Pamir. The crew of the radar company was awarded orders and medals for timely detection of the violator: Major V. Kulagin—the Order of the Red Star; senior lieutenants V. Urbanovich and K. Shchleshchinskiy, Corporal G. Lysov, and Private G. Startsev—the Distinguished Service Medal. The aircraft, flying on a heading toward Moscow, was shot down by a S-75 SAM system already deployed by that time in the Urals.

According to the testimony of the American pilot Powers, who bailed out of the aircraft, a U-2 strategic reconnaissance aircraft was used to violate USSR airspace. Its service ceiling was 21,000-24,000 meters. It was accepted into service in 1956, which was unknown to our intelligence. Otherwise, at a meeting of the CPSU Central Committee Politburo in April 1960, the chairman of the State Committee for Aviation Equipment, P.V. Dementyev[5], and aircraft designer A.I. Mikoyan[6] would not have stated that there is no aircraft in the world that could fly at an altitude of 20,000 meters for 6 hours 48 minutes. It turns out that they could and did, and even by that time had made almost 30 reconnaissance flights.

In 1960-1961, the corps received ahead of time 5,000 officers and about 20,000 soldiers and noncommissioned officers, more than 100 S-75 SAM systems, and a considerable number of new radars, including 12 P-14 radars, at that time the most modern. These fixed radars were deployed most successfully in the 41st Radar Regiment, which was commanded by D.N. Solodchenko[7]. Much credit belongs to him and his subordinates—officers N. Kozlov, A. Romazanov, and A. Shendrik.

In addition to the two existing ones, the corps was reinforced with four more fighter regiments and renamed the 30th Separate Air Defense Corps. It was necessary to activate and retrain on new equipment, with subsequent live firing at the range, 11 SAM brigades and two regiments. In addition, it was necessary to reactivate and reinforce the radiotechnical troops. Flight training and setting up facilities of fighter units became a subject of special concern. The matter was complicated due to the many types of aircraft in the fleet: MiG-15's, MiG-17's, MiG-19's, Yak-25's, Yak-28P's, and Su-9's.

The commander of the Turkestan Military District, General of the Army I.I. Fedyuninskiy[8], treated us with much sympathy and understanding of the problems that had arisen. The leaders of the Central Committee and government of the union republics of Central Asia and Kazakhstan, and local authorities also helped. This made it possible already by 1964-1965 to station people in well-equipped camps.

Officers of the staff and headquarters of the corps worked in a new way in the situation that had developed: I.I. Frolov[9], P.A. Krymskiy[10], N.I. Naumov[11], Ya.N. Yefromeyenko[12], O.P. Yefimov[13], S.A. Sandrigaylo[14]; division commanders V.S. Deyev[15], V.D. Slyusar[16], A.D. Kotov[17]; brigade commanders N.V. Chemerikin[18], D.P. Pavlushchenko[19], M.B. Shelomkov[20], and fighter regiment commander P.Ye. Kuzin.

In May 1963, the corps was deployed into the 12th Separate Air Defense Army. However, strengthening the air defense on the USSR's southern border did not rid

the neighboring side from the temptation to make provocative flights over our territory.

In the summer of 1963, L.I. Brezhnev[21] arrived on a visit to Iran. It was at that time, when he was speaking at the medzhlis, that a reconnaissance aircraft penetrated our airspace. Alert forces of the 156th Fighter Regiment—flight commander Stepanov and wingman Sudarikov—intercepted it and shot it down. Nevertheless, the intruder aircraft was able to reach Iranian territory and fell in the city of Mominabad, 30 km from the border. A note was disseminated among the medzhlis deputies—Soviet pilots over the territory of Iran had just shot down an Iranian civilian aircraft. The shah asked L.I. Brezhnev to interrupt his speech until the circumstances of the incident were clarified. It was established right then that an Iranian aircraft had departed toward the Soviet border without the notification or authorization of civilian authorities. After apologies by the shah of Iran, L.I. Brezhnev continued his speech. Then I was warned a second time about incomplete duty compliance. It is unpleasant to recall how then-Commander in Chief of the National Air Defense Forces V.A. Sudets[22] at the Military Council in Moscow, tendentiously examining the circumstances of what had taken place, demanded that pilots Stepanov and Sudarikov be brought before a court martial. But to this I responded that in such a case I would be forced to submit a request to be removed from my position and face a court martial together with the pilots—I had issued the order to shoot down the aircraft. I also said that such a precedent could make pilots afraid of being responsible for explicit fulfillment of an operation order. The Military Council was forced to agree with my arguments.

Returning from Iran, L.I. Brezhnev made a stop in Tashkent. I was among those meeting him at the airfield together with the district commander, I.I. Fedyuninskiy. Calling us to the side, L.I. Brezhnev said: "Our relations with Iran are returning to normal. So, I ask you, comrades—be a little more careful at the border."

We fulfilled this request literally. Exactly one year later, the same Condor-type aircraft violated the air border. It was intercepted by flight commander I. Zhuravlev. In the air, at the moment of the intercept, the crew of the violator "raised their hands" in a friendly manner and, implicitly obeying Zhuravlev, landed at the airfield in the vicinity of Mary. When asked why they did not try to head for the border like their predecessors did, they replied: "In your country, you see, they kill you immediately..."

According to the results of the investigation conducted by the chief of staff of the National Air Defense Aviation, General I.P. Bashilov, it became clear that in both instances the intruder aircraft were performing flights in the interests of an Iranian-American geographic and cartographic company. However, given all the reconnaissance equipment on the aircraft and the crew's special training under the direction of American instructors, it was convincing proof that it was affiliated with the CIA.

During the border violations, the interceptors were controlled from the command post by the commander of the 17th Air Defense Division, A.D. Kotov, the commander of the 156th Fighter Regiment, P.Ye. Kuzin, and the commander of the 12th Radiotechnical Brigade, L.B. Goshchinskiy[23]. All punishment imposed on me earlier was dismissed, and the actions of my subordinates were held up as an example for the National Air Defense Forces.

Such episodes, of course, will never be forgotten. They are the ones that provide an opportunity to deeply realize the meaning of our service and really check the degree of readiness to carry out the assigned mission in any conditions. All the same, this is the workaday routine. True, a combat routine.

The Country's Antiballistic-Missile Shield

In late April 1966, the commander in chief of the National Air Defense Forces, General of the Army P.F. Batitskiy, unexpectedly summoned the commander of the Turkestan Military District, Colonel-General N.G. Lyashchenko[24], and me to the State Central Testing Range at Lake Balakhash. From there we flew on his aircraft to Alma-Ata. We had barely gained altitude and turned on a heading for the Kazakh capital, when the commander in chief informed us of the Military Council's decision to recommend me for a higher position. The position itself was not mentioned, and my question went unanswered. My persistent request to be given an opportunity to continue to command the Army and complete implementation of the plans, supported by N.G. Lyashchenko, was not taken into consideration and only irritated P.F. Batitskiy.

P.F. Batitskiy, who jointly with organizations of industry directly supervised the work to create an antiballistic-missile [ABM] and space defense [SD], managed with great difficulty to obtain the consent of the General Staff and on 30 March 1967 to get a directive to organize a new branch of ABM and SD troops as part of the National Air Defense Forces.

Development and creation of these defensive weapon systems began back in the early 1960's. Lead facilities were created; military units were formed. For air defense, all work was performed by special directorates, which were headed by Major-General of Artillery M.M. Kolomiyets[25] and Major-General of Artillery I.Ye. Baryshpolets[26], subordinate to the Main Procurement Directorate, the chief of which was Colonel-General of Aviation G.F. Baydukov[27].

The directorates of M.M. Kolomiyets and I.Ye. Baryshpolets performed important procurement functions, monitoring the progress and status of construction and installation work and training of personnel to participate in it.

For P.F. Batitskiy, creation of a troop structure for ABM and SD was a done deal. The candidate for the position

of commander of the troops being created was also determined. And he had flown to the testing range primarily to discuss the matter about my appointment with the leaders of the republics, D.A. Kunayev[28] and Sh.R. Rashidov[29], and also with the commander of the Turkestan Military District, Colonel-General N.G. Lyashchenko.

The very fact that I was the one chosen was a complete surprise. As a rule, those nominated for key posts in our troops were from the Moscow Air Defense District. P.F. Batitskiy had been in command for 11 years and treated his charges very jealously. Nevertheless, I was soon summoned to Moscow for an interview at the CPSU Central Committee.

I was received by the head of the administrative bodies department of the Party Central Committee, N.I. Savinkin[30]. Having prepared for a detailed conversation, I admit I was somewhat disheartened by its brevity. The result—further uncertainty about the situation. Savinkin merely informed me that the secretary of the CPSU Central Committee, D.F. Ustinov[31], was studying my personal file. Ustinov expressed surprise that the National Air Defense Forces could not propose a prominent engineer for the position. Savinkin concluded the conversation by saying that I should not be upset in the event Ustinov objected.

The next morning, Savinkin and I entered Ustinov's office. Dmitriy Fedorovich gave us a friendly welcome and with an energetic motion of a hand invited us to sit next to him. We lit up a cigarette. After several protocol questions, he suggested that I report in detail how I assessed the condition of armament in the Air Defense Forces. I decided to speak straight from the shoulder, although I knew that it was Ustinov who was the first person responsible for supplying the Army with weapons and equipment.

I began by saying that the S-75 SAM system was unable to destroy aircraft and cruise missiles at low and extremely low altitudes and required a significant upgrade. Reinforcing SAM groupings with the low-altitude S-125 system would require large additional expenditures. The Su-9 fighter-interceptors, modern for that time, and the YaK-28P aircraft, not in service but being series produced, had extremely unreliable engines, booster system, and radar sights. This has resulted in an increase in the accident rate and unjustified pilot deaths. The RS-2US air-to-air missiles had a target kill effectiveness of only 0.6-0.7. The radars of the Radar Troops had low protection against jamming, which made it necessary to have radars of a different band. Due to this, we had to increase the number of radars in each grouping and consume their service life. In conclusion, I asked for acceleration of the commissioning of the MiG-25 fighter-interceptor, which is able to detect low-flying targets against background of the earth and destroy them.

D.F. Ustinov did not interrupt me a single time, and only rarely made some notes. When I finished, he looked at me closely and said that I was among those few who in this office did not spout slogans and praise our armament. Then he asked a question: Would I be able to report all this to L.I. Brezhnev, which for him is important. I said I would, without hesitation. In parting, Ustinov said: "Yuriy Vsevolodovich, I have an urgent request for you. In your future service you will have to work with general designers comrades Mints and Kisunko. Each of them now is working on creating their own local weapon system, and your job is to try to combine these efforts"—in saying this, Dmitriy Fedorovich clasped his hands together in the typical gesture. "This will make it possible to reduce the time for creating them and state spending."

Only after leaving Ustinov's office did I understand that his parting words signified nothing more than concurrence with my appointment. Soon after, a smiling Savinkin came out of the office, extended his hand to me, and said that Brezhnev would see me right after the May holidays.

On 11 May 1967, accompanied by Savinkin, I entered the office of the general secretary of the CPSU Central Committee. Leonid Ilich was standing at an open window and smiling. He interrupted my report with the words: "No need to make a fuss..." He hugged me by the shoulders and offered me a seat. After reading some kind of paper on the desk in front of him, he said: "The Central Committee blesses your appointment. Yes, by the way, Dmitriy Fedorovich asked me to listen to you. But you saw how many people are in the waiting room. Therefore, let us do it this way: in the near future I will be at one of your installations, and we can talk about everything in detail there."

Brezhnev never visited a single one of our installations.

The need to create a new defensive branch of troops was dictated by no means by the ambitions of politicians and the military, as some journalists are now trying to present it, but by the dangerous toughening of the U.S. military doctrine and the arms race imposed upon us.

At that time as well as now, the American military doctrine is based on the fact that military force is the main and end means of settling controversial foreign policy problems—the "arbiter of the last instance." It was in the United States that the strategy of "massive retaliation" was developed, at the basis of which was the principle of nuclear superiority. As a result of a change in the correlation of forces in the world arena in the early 1960's, the American military-political leadership adopted the "flexible response" strategy, which called for preparing and waging various types of war with a dosed use of military force commensurate with the scale of danger to U.S. "vital interests." In 1967, in accordance with the "nuclear deterrence" doctrine, creation of the strategic triad was concluded in the United States: intercontinental ballistic missiles, nuclear-powered missile-carrying submarines, and strategic bombers. The potential of U.S. strategic offensive forces was about 5,000 nuclear weapons.

After taking over as commander of the ABM and SD Troops, I spent two months becoming familiar with the collectives and the content of work being performed in a number of scientific research institutes, design bureaus, and at installations being created. The headquarters was formed. With the approval of the commander in chief of the National Air Defense Forces, prominent engineers who had a good schooling in the surface-to-air missile troops and primarily in the special-purpose army were appointed to the main positions in the headquarters. Among them were A.M. Mikhaylov[32], V.A. Yedemskiy[33], Ye.D. Tsvetkov[34], A.K. Mikhaylov[35], V.V. Golubev[36], V.T. Timofeyev[37], A.P. Blinov[38], and V.M. Shumilin[39].

An Insurmountable Barrier for 'Pershings'

Back in 1953, it became known that the United States was developing and testing intercontinental ballistic missiles [ICBM's] which could become a means of delivering nuclear strikes against targets on the territory of the USSR. In August 1953, seven Marshals of the Soviet Union, after assessing this circumstance, together with Chief of the General Staff V.D. Sokolovskiy, sent a memorandum to the CPSU Central Committee requesting it consider the possibility of creating ABM weapons in our country.

Despite the novelty and complexity of the task and the skeptical attitude of many prominent scientists, the creators of the S-25 system, led by Doctor of Technical Sciences G.V. Kisunko, undertook the work. By 1955, proposals for a test-range antiballistic-missile defense prototype were prepared—system "A."

Then work was launched to create a range for the National Air Defense Forces near Lake Balakhash. Military construction workers under the direction of A.A. Gubenko, organizations of industry, and range personnel participated in the work. By 1961, in addition to other facilities, everything necessary for full-scale testing of system "A" was prepared. Special note should be made of the contribution in this by the chief of the range, Major-General of Artillery S.D. Dorokhov.

On 4 March 1961, an antiballistic of general designer P.G. Grushin[40], equipped with a fragmentation warhead, destroyed the warhead of an R-12 ballistic missile launched from the Kapustin Yar Range. During 20-29 March, a group of designers and military personnel left on an artillery prime mover to the steppe in the vicinity of where the warhead fell, which was also found destroyed by a direct hit. Its fragments were spread out over the flight path, 1-2 km apart. Kusinko's deputy, M.G. Minosyan[41], reported to him on the results of the search. Kisunko unexpectedly asked: "Do you have anything to drink?" Receiving a positive answer, he said: "You can celebrate this event! You and I! " The enormity of this achievement is confirmed by the fact that the United States accomplished the non-nuclear destruction of a ballistic missile only 23 years later. A pedestal with an antiballistic missile was placed at the sixth launch site of the range. Four lines, composed on the spur of the moment by G.V. Kisunko that spring day, are stamped on it:

"Tulips were burned on the launch so tulips could bloom throughout the country."

Our achievements in the area of ABM defense were kept silent for a long time and not given the proper assessment. Meanwhile, the act of destroying a ballistic missile was, without a doubt, an important event. It is not by chance that in the summer of that same year N.S. Khrushchev, speaking at an international forum, could not restrain himself and said that there are skilled craftsman in the Soviet Union who can hit a fly in space.

The successful experiment made it possible already in June of 1961 to complete the development and produce a conceptual design of the A-35 ABM system designed to protect Moscow. The project called for a system to be created to destroy Titan-2 and Minuteman-2 single-warhead ballistic missiles, which were in service in the U.S. Army in 1963 and 1965. This system was to have a command post, eight radars forming a circular long-range detection field, and 32 firing complexes.

In the fall of 1962, the conceptual design of the A-35 system was defended. The commander of the Moscow Air Defense District, Colonel-General P.F. Batitskiy, was appointed chairman of the commission.

There were hectic debates at the commission's final meeting. Batitskiy became tired of this and turned to G.V. Kisunko:

"Well, Grigoriy Vasilyevich, are you going to disappoint us? Will everything be as you say?"

"Of course, Pavel Fedorovich, I swear to you," replied Kisunko.

"Well, okay, I believe you... And all of you here," he turned to the hall, "be quiet."

With these words Batitskiy hugged and kissed Kisunko.

However, Batitskiy did not take into account that the experiment-operation "K" was carried out back in December 1956 at the Semipalatinsk Range based on experiments conducted at KB-11 (now known as Arzamas-16) by Academician Yu.B. Khariton[42], now already by the forces of officers from the Sixth Main Directorate of the Ministry of Defense, scientific associates of the Institute of Chemical Physics of the USSR Academy of Sciences, and designers of the missile equipment. The scientific director was the most prominent expert in the field of the theory of nuclear detonations, Academician M.A. Sadovskiy[43], and his deputy was the chief of the Scientific Research Department of the Main Procurement Directorate of National Air Defense, M.G. Mymrin[44].

According to the results of operation "K," it became clear that the fragmentation warhead of an antiballistic

missile could be replaced with a nuclear warhead, and this significantly increased the kill radius and effectiveness. In this connection, reducing the number of firing complexes to 16 and updating the functioning principles of the system were substantiated in the new conceptual design produced in 1964.

Construction and installation work was begun at the system installations: at the command post, Dunay-3 (chief designer V.P. Sosulnikov[45]) and the improved Dunay-3U (chief designer A.N. Musatov[46]) sector radars, and firing complexes; a technical base was created for preparing and maintaining the antiballistic missiles; and maximum use was made of circular roads, cable communications links, and part of the other structures of the S-25 system, which was efficient and helped reduce spending on the new weapon system.

At the same time, an experimental model of the A-35 system—the "Aldan"—was created at the range by 1967. This set the beginning of real urgent work to intercept ballistic missiles for the purpose of testing the system and later supporting live firings by ABM units near Moscow.

For the sake of fairness, it must be said that the A-35 system was created in 15 years, from the start of construction in 1962 until the testing was conducted. During this time, the United States was developing and testing at an accelerated pace land- and sea-based ballistic missiles: Minuteman-3, Polaris A-3T, Poseidon C-3 with multiple warheads, having from 3 to 10 warheads. The A-35 system was unable to destroy such missiles, especially in conditions of jamming and use of a system for ABM penetration (a large number of light and heavy decoy targets and active jammers, camouflaging the warheads themselves on their flight trajectory), which became obvious already by 1971. What is more, the A-35 launchers in this system were ground-based exposed launchers and always had missiles on them, fueled with corrosive propellant components and loaded with a powerful nuclear charge, which was simply impermissible. In the event of an accident or sabotage in the heavily populated areas near Moscow, a dangerous area of radiation contamination could arise.

The Americans, having taken all these circumstances into account, in 1976 made the decision to remove the Safeguard ABM system from alert status, which was set up at the Grand Forks missile base, and partially dismantle it

I will anticipate a question: Why did we not reject the A-35 system? By 1971, only four of the eight Dunay sector radars and eight of the 16 firing complexes had been built. The construction work at these installations was almost completely done, deliveries and installation of technological equipment were completed, and testing had begun. State testing under the direction of the first deputy commander in chief of the National Air Defense Forces, Colonel-General A.F. Shcheglov[47], was conducted at the lead complex of the system, consisting of: the main command and computer center (in abbreviated form), one Dunay-3 radar, and three firing complexes. Testing confirmed the correctness of the scientific and technical decisions supporting the combat functioning of the new, complex, and completely automated system for destroying a single-warhead ballistic missile. The system could not work against ballistic missiles with multiple warheads. In this connection, the decision was made, supported by the military-industrial commission (VPK), to finish building the facilities already started: at the second Dunay-3U radar and at five firing complexes. All the rest of the work for deployment of a full-strength system was halted. At the insistence of a majority of the members of the commission, the system was accepted only into experimental operation and virtually returned to industry for modernization with the task of destroying complex ballistic missiles.

Personnel under the supervision of the chief of the ABM Directorate, Lieutenant-General of Artillery I.Ye. Baryshpolets, with the active participation of officers of my directorate, were persistently mastering the new combat equipment. The experience acquired by the troops during the period from 1972 to 1977 in the course of experimental operation produced the desired result. The new combat equipment was successfully mastered, particularly by the engineers, many of whom could carry on a dialogue with the designers as equals, including when operating the 5E-92B computers (chief designer V.S. Burtsev[48]) and their algorithm software.

I must mention the personal contributions of the chief of the ABM Engineer Troops, Major-General A.P. Penkov[49]. He was the one who developed a method of operating the complex automated weapon system (A-35 ABM system) and repairing it, as well as the organization and establishment of operational departments in armament services of large units and units.

In turn, the chief of the combat employment department at the large unit's headquarters, Colonel A.G. Kubarev[50], justified the need for creating and the structure of departments of combat algorithms and programs. Later on, this experience was adopted and extended to all the ABM and SD troops.

In 1973, general designer G.V. Kisunko justified in a technical report the basic scientific and technical decisions for modernizing the system to destroy a complex ballistic missile.

I recall how in the summer of 1975, when Grigoriy Vasilyevich and I were at the main command and computer center analyzing the results of the functioning of the combat program to destroy a complex ballistic missile in different variants of its launch, the "Kremlin" phone rang. The duty officer reported that the minister of the radio industry, P.S. Pleshakov[51], was calling and asking to speak with the general designer. Grigoriy Vasilyevich told me: "Finally, the minister remembered the system and will probably help." He went to the

telephone smiling, but I saw how his face began to grow gloomy during the conversation.

The minister told Kisunko that he had signed an order relieving him from his position and duties as general designer. To Kisunko's objection that he had been approved by the CPSU Central Committee and that Pleshakov had exceeded his authority, the minister replied that he had coordinated with the Central Committee on this matter. Actually, concurrence, with virtually no grounds, was given by the head of the defense office, I.D. Serbin, a party apparatchik with a long tenure, a dishonorable person, and a typical opportunist.

Thus, an outstanding and gifted designer literally on the upsurge was put out of commission in the prime of his life and outstanding organizational capabilities as a result of intrigues at the Ministry of the Radio Industry. Chief designer I.D. Omelchenko[52] supervised further completion of the modernization work.

In May 1977, the A-35M ABM system was presented for state testing. This system became a weapon of the separate corps commanded by Major-General N.I. Rodionov[53]. Thorough preparation made it possible to conduct testing over one month and obtain favorable results. The A-35M ABM system was now able, with some limitations, to destroy complex ballistic missiles, and the time for preparation and delivery of the ABM missiles from the technical base to the exposed, ground-based launch positions in a crisis situation was reduced significantly.

The A-35M ABM system was accepted into service and placed on alert status in 1978. The antiballistic missiles were fueled with propellant components and equipped with a warhead only at the technical base. Electrically weighted mock-ups were installed at the launch positions.

In 1979, it became known that the United States was planning to station 108 new Pershing-2 medium-range ballistic missiles on the territory of the FRG in 1983-1985 in place of the shorter-range Pershing-1 missiles.

The Pershing-2 missile, with a firing range of 2,500 km and a single warhead of two types (nuclear and conventional), is designed to destroy both ground-based and hardened underground targets and is able to penetrate to a depth of 70-100 meters and then detonate. The high firing accuracy was determined by the circular error probable of 20-40 meters. According to our calculations, the Pershing-2's flight time to Moscow was only 10-12 minutes. It was completely obvious that this was a very serious threat and a real possibility of surprise destruction of hardened command and control facilities of the state and the Armed Forces.

In essence, the Pershing-2 missiles were a cocked pistol held to the Moscow's head.

In this connection, Minister of Defense D.F. Ustinov held a meeting, to which he invited the chief of the General Staff, N.V. Ogarkov[54], the commander in chief of the Warsaw Pact Armed Forces, V.G. Kulikov[55], the commander in chief of the National Air Defense Forces, A.I. Koldunov[56], the commander in chief of the Navy, S.G. Gorshkov[57], the first deputy commander in chief of the Strategic Rocket Forces, Yu.A. Yashin, the first deputy chief of the General Staff, V.I. Varennikov[58], and me.

When the minister asked if the Air Defense Forces were able to detect the launch of Pershing-2 missiles no later than 2-3 minutes after launch, A.I. Koldunov, always thoroughly prepared for such meetings, reported that this mission was partially being accomplished. The minister demanded an explanation from me, as an expert. I said that the Dunay-3U long-range detection radar from a separate ABM corps, oriented to the west, is capable of accomplishing this mission in this search sector covering the northern and central part of the FRG. The southern part of the FRG territory is not monitored by our assets at extremely low angles. D.F. Ustinov right then instructed the chief of the General Staff to assign the appropriate task to the scientific research institutes and design bureaus.

As the meeting progressed, the missilemen were tasked to prepare to move up two medium-range missile brigades to the territory of the GDR and Czechoslovakia. The seamen were tasked to increase the number of missile-carrying submarines on combat patrol and to move them closer to the United States.

The military-political conclusion drawn by the USSR minister of defense from the actions being planned by the United States had special significance. In the event the Americans used the Pershing-2 missiles in Europe, the Soviet Union reserved the right to strike the United States with all its nuclear might. The Americans knew this. Thus, their risky plan to take cover beyond the ocean in the event a nuclear war was unleashed in Europe fell through.

Academician V.S. Semenkhin[59] became involved in the work to solve the problem of detecting the Pershing-2 missiles, 27 of which were deployed in the southern part of the FRG. Several projects were developed, requiring much time and expenditures. As often happened during my time in the service, the solution came not from a scientific research institute or design bureau, but from the troops. A group of officers, innovative engineers—T.Ye. Kozhemyakin, A.A. Peresypkin, and V.A. Shelopin—under the direction of the deputy for technical affairs of the Dunay-3U sector radar, I.S. Lipatov, substantiated and submitted a proposal to modify the transceivers. Such a seemingly simple solution made it possible to expand the search sector and reliably cover the entire territory of the FRG.

Of course, opponents immediately came up with proposals in response. Experts at the Ministry of the Radio Industry maintained that modifying the transceivers and increasing the power load on them would inevitably lead

to a fire. As a result, it was necessary to conduct several experiments and hectic meetings of the military-industrial commission. Being the nerve center and coordinator in the matter of ensuring the defense capability of the USSR, it sort of crowned a distinctive pyramid of the country's military-industrial complex. Frequently, the parochial interests of the defense ministries, departments, and planners and designers of new types of equipment and armament were at variance with the customers, that is, the military. And thanks only to the authority of the deputy chairman of the USSR Council of Ministers, L.V. Smirnov[60], who headed the VPK and possessed broad powers granted him by the CPSU Central Committee Politburo, were we able to preserve priority positions in the world in supplying the armed forces with first-class weapons. In the area of ABM and SD, as a rule, the determining scientific and technical position was that which was defended by the deputy chairman of the VPK, L.I. Gorshkov, and also V.M. Karetnikov[61] and V.S. Dubrovskiy[62].

A regularly scheduled meeting at the office of the minister of defense examined and discussed several projects, including one by Academician M.S. Semenikhin, who proposed using a group of altimeters of the Radiotechnical Troops. According to my report, it was decided to immediately modify the transceivers and combat program of the radar, taking additional steps for fire safety.

The radar was modified in a short time with minimal costs. The officers directly involved in this work were awarded orders—V.T. Blotskiy, V.D. Barabanov, V.I. Maslov, I.S. Lipatov, P.K. Turygin—and medals—G.A. Latyshev, Ye.I. Filin, S.V. Klemanov, N.M. Yepaneshnikov, and Warrant Officer P.M. Astrakhantsev. The deputy chief designer of the radar, Ye.N. Belkin, and his associates made a great contribution to this work. Direct on-site supervision of the work was accomplished by the unit commander, V.N. Kryukov, and also the commander of the separate ABM corps, V.A. Savin[63], and deputy chief engineer V.A. Malikov. Scientific and technical supervision was accomplished by Doctor of Technical Sciences A.I. Leonov.

The experience of creating and operating the A-35M system equipment was used in future work on systems for missile attack warning, space defense, and monitoring outer space. Many commanders and engineers, and in particular I.Ye. Baryshpolets, N.I. Rodionov, B.A. Savin, A.P. Penkov, A.G. Kubarev, V.A. Malikov, D.P. Pushkarev, I.D. Bashtan, M.I. Parfenov, I.V. Poddubnyak, M.T. Tyurin, Yu.V. Sokolov, I.R. Orel, A.Ye. Zikeyev, and V.N. Kryukov, went down in the history of the ABM and SD troops as pioneers in creating the newest types of combat equipment and armament.

Based on the ABM experience, it was possible to create for the first time in the National Air Defense Forces strong offices of combat algorithms and programs in each unit and large unit. Of great importance in the matter of increasing combat readiness were the repair and testing bases created at each installation and equipped with bench equipment and instrumentation.

In September 1967, I was appointed chairman of an inter-departmental commission for examining new ABM system and equipment designs. And there were several. The commission included prominent scientists, general and chief designers, and prominent experts from the Ministry of Defense and defense sectors. Among them were M.G. Mymrin, B.V. Bunkin[64], R.A. Valiyev, V.M. Glushkov[65], P.D. Grushin, G.V. Kisunko, S.A. Lebedev[66], G.S. Legasov[67], A.L. Mints, and Yu.B. Khariton.

The basic comprehensive conceptual design of G.V. Kisunko for the Avrora ABM system was rejected, since it did not meet a number of effectiveness and reliability requirements. But the proposed Argun multichannel firing complex with a rotating phased-array antenna, which is still serving effectively to this day, was recommended for creation at the range as the main measuring device. Also rejected were designs by A.L. Mints for the Don-2N multifunctional radar and Yu.G. Burlakov[68] for a fundamentally new Neman radar, although a reduced prototype of it was created at the range for solving problems of discrimination of complex ballistic targets.

The main reason for rejecting designs was that they did not resolve the main problems of antiballistic-missile defense with the required effectiveness:

—discrimination of ballistic missile warheads against a background of dummy targets and in conditions of intensive jamming and nuclear detonations;

—creation of a new generation of computers with a speed of hundreds of millions of operations per second;

—creation of effective weapons for destroying a missile in various portions of the flight trajectory using various physical principles.

Scientific research institutes and design bureaus continued research on problems of ABM defense. Taking into account the recommendations of the inter-departmental commission, an extensive program of scientific research and experimental design work was defined under the "Fon" program. The work was extremely complex, and funds for it were not increased, but were reduced. In addition, the scientific research institutes and design bureaus did not have the proper experimental base.

Nevertheless, by June 1975 it was already possible to clearly define the purpose and time periods of development and creation of the new Moscow ABM system. A.G. Basistov[69] became the general designer. V.K. Sloka[70] was the chief designer of the multifunctional Don radar. The main developer of algorithm software and information matching of the ABM system with warning and space monitoring systems was deputy general designer M.G. Minosyan. I had the opportunity to

be chairman of the commission for examining the conceptual design jointly with the collective of the All-Union Scientific Research Institute, which will be discussed in the next part of the article. A.G. Basistov headed the Council of Chief Designers, who were working on a new effective ABM system. The system was created by 1989.

Thus, the 30 years of labor on solving problems of A' M defense produced a positive result, but the main thing is that it preserved cadres of enthusiasts capable of accomplishing the most complex scientific and technical tasks. And this was done with total observance of the provisions of the ABM Treaty concluded with the United States in 1972.

Anticipating a subsequent presentation, I would like to say that in 1968, V.I. Markov[71] was appointed to the position of deputy minister of the radio industry. His name is inseparably linked to the further vigorous development of the ABM and SD armed forces. Heading a sector, Markov created the gigantic scientific and technical association "Vympel." This was 10 institutes and an equal number of plants. Development of antiballistic-missile and space defense complexes and systems was accomplished under a unified leadership.

Today, the association has become an interdepartmental corporation with the same tasks and participants, now not only on the territory of Russia but also in Ukraine, Belarus, and Kazakhstan.

(To be continued.)

Footnotes

1. Nikolay Dmitriyevich Yakovlev (1888-1972)—marshal of artillery. From 1955 first deputy commander in chief of the National Air Defense Forces.

2. Yevgeniy Yakovlevich Savitskiy (1910-1990)—marshal of aviation, Twice Hero of the Soviet Union. From 1948 commanded Air Defense Fighter Aviation. From 1966 was deputy commander in chief of the National Air Defense Forces.

3. Stepan Dmitriyevich Dorokhov (1913-1966)—lieutenant-general of artillery. Chief of staff of artillery of the 6th Guards Army and a surface-to-air missile [SAM] corps. Chief of the State Air Defense Test Range 1956-1966.

4. Pavel Yefimovich Kuzin (born 1923)—colonel. In 1963 was chief of fighter aviation of the 17th Air Defense Division. In 1965 was chief of a pilot-cosmonaut flying club.

5. Petr Vasilyevich Dementyev (1907-1977)—colonel-general engineer, Twice Hero of Socialist Labor. From 1965 minister of the aviation industry of the USSR. Chairman of the State Committee for Aviation Equipment 1957-1965.

6. Artem Ivanovich Mikoyan (1905-1970)—aircraft designer, colonel-general of the engineer and technical service. Twice Hero of Socialist Labor.

7. Dmitriy Nazarovich Solodchenko (born 1918)—colonel. In 1960 was commander of the 41st Radiotechnical Regiment. In 1964 was deputy chief of the Radiotechnical Troops of the 12th Separate Air Defense Army.

8. Ivan Ivanovich Fedyuninskiy (1900-1977)—general of the army, Hero of the Soviet Union. Commander of the Arkhangelsk, Transcaucasus, and Turkestan military districts 1954-1965.

9. Ivan Ivanovich Frolov (born 1916)—major-general. In 1963 was chief of the political department and member of the Military Council of the 12th Separate Air Defense Army. In 1968 was department chief at the Military-Political Academy imeni V.I. Lenin.

10. Petr Aleksey Krymskiy (1918-1968)—major-general of artillery. In 1961 was deputy commander of the 30th Separate Air Defense Corps. In 1963 was deputy commander for combat training of the 12th Separate Air Defense Army.

11. Nikolay Ivanovich Naumov (born 1918)—major-general of artillery. In 1961 was chief of the SAM troops of the 30th Separate Air Defense Corps. In 1963 was chief of the SAM troops of the 12th Separate Air Defense Army.

12. Yakov Nikanorovich Yefromeyenko (1917-1992)—major-general of aviation. In 1963 was chief of aviation of the 12th Separate Air Defense Army. In 1968 was chief of a national air defense aviation inspectorate. Honored military pilot of the USSR.

13. Oleg Petrovich Yefimov (1918-1979)—major-general engineer. From 1963 chief of the radiotechnical troops of the 12th Separate Air Defense Army.

14. Sergey Andreyevich Sandrigaylo (born 1923)—major-general. In 1963 was chief of the headquarters operations department of the 12th Separate Air Defense Army. In 1966 was chief of staff of the Directorate for Creating Space Defense Facilities.

15. Vladimir Stepanovich Deyev (born 1920)—major-general. In 1962 was commander of the 7th Air Defense Division. In 1970 was commander of an air defense corps.

16. Viktor Dmitriyevich Slyusar (born 1922)—major-general. In 1965 was first deputy chief of staff of the 12th Separate Air Defense Army. In 1967 was commander of the 15th Air Defense Division. In 1972 was deputy commander for combat training of the 2d Separate Air Defense Army.

17. Aleksey Dmitriyevich Kotov (1920-1990)—lieutenant-general. In 1961 was commander of the 17th

Air Defense Division. In 1966 was first deputy commander of the 6th Separate Air Defense Army, civil defense chief of staff of Leningrad and the oblast.

18. Nikolay Vasilyevich Chemerikin (born 1920)—colonel. In 1961 was commander of the 132d SAM brigade. In 1965 was chief of staff of the 7th Air Defense Division.

19. Dmitriy Pavlovich Pavlushchenko (born 1918)—colonel. In 1961 was commander of the 145th Guards SAM Brigade. In 1969 was senior adviser in an air defense division in Egypt.

20. Mikhail Borisovich Shelomkov (born 1921)—colonel. In 1961 was commander of the 87th SAM Brigade. In 1964 was garrison chief in the city of Alma-Ata.

21. Leonid Ilich Brezhnev (1906-1982)—Marshal of the Soviet Union, four times Hero of the Soviet Union. From May 1960 to July 1964 was chairman of the Presidium of the USSR Supreme Soviet. First secretary of the CPSU Central Committee 1964-1966 and general secretary of the CPSU Central Committee from 1966.

22. Vladimir Aleksandrovich Sudets (1904-1981)—marshal of aviation. Hero of the Soviet Union. Commander in chief of the National Air Defense Forces and deputy minister of defense of the USSR 1962-1966.

23. Lev Benyaminovich Goshchinskiy (born 1924)—colonel. In 1963 was commander of the 12th Radiotechnical Brigade. In 1965 was chief of the radiotechnical troops of an air defense corps.

24. Nikolay Grigoryevich Lyashchenko (born 1910)—general of the army. From 1963 commander of a number of military districts.

25. Mikhail Markovich Kolomiyets (born 1918)—lieutenant-general. Hero of the Soviet Union. In 1963 was chief of the Directorate for Creating Space Defense Facilities.

26. Ivan Yefimovich Baryshpolets (1916-1976)—lieutenant-general. In 1963 was chief of the ABM Troops Directorate.

27. Georgiy Filippovich Baydukov (born 1907)—colonel-general of aviation. Hero of the Soviet Union. In 1961 was chief of the Fourth Main Armament Directorate of the Ministry of Defense.

28. Dinmukhamed Akhmedovich Kunayev (1912-1993)—party figure and statesman, three times Hero of Socialist Labor, academician of the Kazakh SSR Academy of Sciences. From 1964 first secretary of the Central Committee of the Communist Party of Kazakhstan.

29. Sharaf Rashidovich Rashidov (1917-1983)—party figure and statesman. Twice Hero of Socialist Labor. From March 1959 first secretary of the Central Committee of the Communist Party of Uzbekistan.

30. Nikolay Ivanovich Savinkin (1919-1993)—from 1968 head of the administrative bodies department of the CPSU Central Committee.

31. Dmitriy Fedorovich Ustinov (1908-1984)—party figure, statesman, and military leader. Marshal of the Soviet Union. Hero of the Soviet Union. Twice Hero of Socialist Labor. Secretary of the CPSU Central Committee 1965-1976.

32. Aleksey Mikhaylovich Mikhaylov (born 1920)—lieutenant-general engineer. In 1967 was first deputy commander of the ABM and SD Troops of the National Air Defense Forces. Winner of the Lenin Prize.

33. Vasiliy Aleksandrovich Yedemskiy (born 1920)—lieutenant-general engineer. In 1961 was chief engineer at the Kapustin Yar Range. In 1963 was chief engineer of the Directorate for Creating an ABM System. In 1967 was deputy commander and chief engineer of the ABM and SD Troops of the National Air Defense Forces. Winner of the Lenin Prize.

34. Yevgeniy Danilovich Tsvetkov (born 1920)—colonel-engineer. In 1961 was department chief in the Directorate for Creating an ABM System. In 1967 was department chief in the armament service of the Directorate of ABM and SD Troops of the National Air Defense Forces.

35. Anatoliy Konstantinovich Mikhaylov (born 1936)—colonel. In 1968 was chief of the computer department at a radiotechnical warning center. In 1970 was senior engineer in the armament service. In 1979 was chief engineer of the sector for warning equipment in the Directorate of ABM and SD Troops of the National Air Defense Forces.

36. Vladimir Valentinovich Golubev (1931-1982)—major-general. In 1965 was assistant chief of the operational and combat training department of a separate ABM corps headquarters. In 1967 was senior officer in a combat employment department. In 1974 was deputy chief of staff in the Directorate of ABM and SD Troops of the National Air Defense Forces.

37. Vladimir Timofeyevich Timofeyev (born 1945)—colonel. In 1975 was deputy chief of the operations department of a separate ABM corps headquarters. In 1982 was a senior staff officer. In 1988 was deputy chief of staff in the Directorate of ABM and SD Troops of the National Air Defense Forces.

38. Anatoliy Petrovich Blinov (born 1945)—colonel. In 1976 was senior engineer of the armament service; in 1989 was senior staff officer of the command of the Missile and Space Defense Troops of the National Air Defense Forces.

39. Vyacheslav Mikhaylovich Shumilin (born 1947)—colonel. In 1976 was chief of a combat crew in a space

warning system department. In 1992 was a senior officer in the Combat Training Directorate of the National Air Defense Forces

40. Petr Dmitriyevich Grushin (born 1906)—scientist and designer in the field of aviation and missile equipment. Twice Hero of Socialist Labor. Academician of the USSR Academy of Sciences. Winner of the Lenin and State Prizes.

41. Mikhail Gareginovich Minosyan (1929-1993)—deputy general designer for the Moscow ABM system. Doctor of technical sciences. Winner of the State Prize.

42. Yuliy Borisovich Khariton (born 1904)—scientist and designer in the field of nuclear physics. Academician of the USSR Academy of Sciences. Thrice Hero of Socialist Labor. Winner of the Lenin Prize and three State Prizes.

43. Mikhail Aleksandrovich Sadovskiy (born 1904)—physicist, academician of the USSR Academy of Sciences, Hero of Socialist Labor. In 1963 was director of the Earth Physics Institute of the USSR Academy of Sciences. Winner of the Lenin Prize and four State Prizes.

44. Mikhail Grigoryevich Mymrin (1918-1984)—lieutenant-general. From 1956 deputy chief of the Fourth Armament Directorate of the Ministry of Defense. Candidate of technical sciences. Winner of the State Prize.

45. Vladimir Panteleymonovich Sosulnikov (born 1921)—from 1958 deputy director for scientific work of the Long-Range Radio Communications Scientific Research Institute [SRI]. From 1966 chief designer of the Dunay-3 long-range detection radar and the Krona space monitoring radar. Doctor of technical sciences. Winner of the Lenin Prize.

46. Aleksandr Nikolayevich Musatov (born 1925)—chief of the scientific and technical department at the Long-Range Radio Communications SRI. Chief designer of the Dunay-3U long-range detection radar and developer of the principles of building the Volga warning radar.

47. Afanasiy Fedorovich Shcheglov (born 1912)—general of the army. Hero of the Soviet Union. First deputy commander in chief of the National Air Defense Forces 1966-1974.

48. Vsevolod Sergeyevich Burtsev (born 1927)—scientist and designer in the field of computer technology. Director of the Precision Mechanics and Computer Technology Institute. Chief designer of the 5E-92B, 5E-51, and Elbrus computer systems. Academician of the Russian Academy of Sciences. Winner of the Lenin Prize and two State Prizes.

49. Anatoliy Pavlovich Penkov (born 1922)—major-general engineer. In 1960 was commander of a SAM regiment. In 1962 was deputy commander and chief engineer of a separate air defense corps. Candidate of technical sciences. Winner of the State Prize.

50. Aleksandr Georgiyevich Kubarev (born 1930)—major-general. In 1967 was chief of the combat employment department of the Directorate for Creating an ABM System. From 1977 combat training chief of the headquarters of the Directorate of ABM and SD Troops of the National Air Defense Forces. Candidate of military sciences.

51. Petr Stepanovich Pleshakov (1922-1987)—deputy chairman of the State Committee for Electronics of the USSR Council of Ministers. Minister of the Radio Industry of the USSR. Doctor of technical sciences. Hero of Socialist Labor. Winner of the Lenin Prize and two State Prizes.

52. Ivan Dmitriyevich Omelchenko (born 1919)—colonel-engineer. Hero of Socialist Labor. Chief designer of the A-35M system. Deputy for scientific affairs of the director of the Radio Instrument Building SRI. Candidate of technical sciences. Winner of the Lenin Prize.

53. Nikolay Ivanovich Rodionov (born 1930)—lieutenant-general. In 1975 was commander of a separate ABM corps. From 1980 commander of a separate missile attack warning army.

54. Nikolay Vasilyevich Ogarkov (born 1917)—Marshal of the Soviet Union. Hero of the Soviet Union. From January 1977 chief of the General Staff of the USSR Armed Forces—first deputy minister of defense of the USSR. Winner of the Lenin Prize.

55. Viktor Georgiyevich Kulikov (born 1921)—Marshal of the Soviet Union. Hero of the Soviet Union. From 1969 commander in chief of the Group of Soviet Forces in Germany. Chief of the General Staff of the USSR Armed Forces—first deputy minister of defense of the USSR 1971-1977. From 1977 commander in chief of the Warsaw Pact Armed Forces. Winner of the Lenin Prize.

56. Aleksandr Ivanovich Koldunov (1923-1992)—chief marshal of aviation. Twice Hero of the Soviet Union. From 1975 first deputy commander in chief and from 1978 commander in chief of the National Air Defense Forces—deputy minister of defense of the USSR. Winner of the Lenin Prize.

57. Sergey Georgiyevich Gorshkov (1910-1988)—Admiral of the Fleet of the Soviet Union. Twice Hero of the Soviet Union. Commander in chief of the Navy—deputy minister of defense of the USSR 1956-1985. Winner of the State Prize.

58. Valentin Ivanovich Varennikov (born 1923)—general of the army. Hero of the Soviet Union. From 1979 chief of the Main Operations Directorate and first deputy chief of the General Staff of the Armed Forces. Until 22 August 1991 was commander in chief of the Ground Forces—deputy minister of defense of the USSR.

59. Vladimir Sergeyevich Semenikhin (born 1918)—scientist in the field of automation and telemechanics. Academician of the USSR Academy of Sciences. From 1965 supervised scientific research organizations. Winner of the Lenin Prize and the State Prize.

60. Leonid Vasilyevich Smirnov (born 1916)—statesman and party leader. Hero of Socialist Labor. From 1963 deputy chairman of the USSR Council of Ministers—chairman of the Military-Industrial Commission (VPK).

61. Viktor Mikhaylovich Karetnikov (1919-1989)—lieutenant-general. Department chief of the VPK for armament of the ABM and SD Troops.

62. Vyacheslav Sergeyevich Dubrovskiy (born 1920)—colonel. From 1962 deputy chief of combat training at the headquarters of the commander of the National Air Defense SAM Troops. Deputy department chief of the VPK for ABM.

63. Viktor Andreyevich Savin (born 1933)—lieutenant-general. In 1972 was commander of a separate antiballistic-missile center. In 1967 was commander of a missile attack warning division. In 1981 was commander of a separate ABM corps.

64. Boris Vasilyevich Bunkin (born 1922)—scientist in the field of physics and electronics. General designer of the S-75, S-200, and S-300 SAM systems. Academician of the USSR Academy of Sciences. Twice Hero of Socialist Labor. Winner of the Lenin and State Prizes.

65. Viktor Mikhaylovich Glushkov (born 1923)—scientist in the field of mathematics and applied cybernetics. Academician of the USSR Academy of Sciences. Hero of Socialist Labor. From 1962 director of the Cybernetics Institute of the Academy of Sciences of Ukraine. Winner of the Lenin and State Prizes.

66. Sergey Alekseyevich Lebedev (1902-1973)—scientist and designer in the field of electrical engineering and computer technology. Academician of the USSR Academy of Sciences. Hero of Socialist Labor. From 1953 director of the Precision Mechanics and Computer Technology Institute of the USSR Academy of Sciences. Winner of the Lenin Prize and two State Prizes.

67. Gennadiy Sergeyevich Legasov (born 1921)—lieutenant-general. In 1951 was a chief of a test team at the State Testing Range of the National Air Defense Forces. In 1962 was chairman of the Scientific and Technical Committee of the National Air Defense Forces. Candidate of technical sciences. Winner of the Lenin and State Prizes. Chief expert of the Russian Academy of Sciences. In 1992 received the Prize imeni Yu.A. Gagarin.

68. Yuriy Grigoryevich Burlakov (born 1928)—scientist and designer in the field of systems engineering and radar. In 1956 was deputy director of a scientific research institute for scientific work and chief designer. In 1968 was the chief designer of the Neman radar. In 1986 was deputy chief designer of the Salyut Design Bureau. Candidate of technical sciences.

69. Anatoliy Georgiyevich Basistov (born 1920)—lieutenant-general of aviation. Scientist and designer in the field of radar and control systems. In 1976 was general designer of the Moscow ABM system. Corresponding member of the USSR Academy of Sciences. Hero of Socialist Labor.

70. Viktor Karlovich Sloka (born 1932)—scientist in the field of radar and information processing. In 1972 was chief designer of the Don multifunctional radar. From 1976 director and scientific manager of the Radio Engineering Institute of the USSR Academy of Sciences imeni A.L. Mints. Doctor of technical sciences, professor. Winner of the State Prize.

71. Vladimir Ivanovich Markov (born 1921)—lieutenant-general of aviation. In 1968 was deputy minister of the radio industry of the USSR. In 1981 was director of the Long-Range Radio Communications SRI. Candidate of technical sciences.

NAVAL FORCES

Khmelnov Confirmed as CINC Pacific Fleet

94UM0550C Moscow KRASNAYA ZVEZDA in Russian 6 Aug 94 p 1

[Article by Andrey Gavrilenko: "CINC Pacific Fleet Appointed"]

[Text] More than two months after the sadly famouns events at the aviation warehouses in the settlement of Novomezhivo, the Pacific Fleet remained without a commander. Only on August 4, by order of the president of the Russian Federation, was Vice-Admiral Igor Nikolayevich Khmelnov appointed to that post.

The new commander was born in 1949 in Ulan-Ude. In 1964 he went to the TOVVMU [Pacific Higher Naval School] im. S.O. Makarov. He began his officer service in the Northern Fleet. Since 1988 he has been in the Pacific Fleet. He has graduated from Higher Command Courses and the Naval Academy. In 1993 he was appointed deputy commander of the Pacific Fleet.

REAR SERVICES, SUPPORT ISSUES

Directorate Renamed 'Main Military Procuracy'

94UM0570C Moscow KRASNAYA ZVEZDA in Russian 26 Aug 94 p 1

[Article by Sergey Ushakov, under the rubric: "From Moscow": "The New Designation Is the Well Forgotten Old Designation!"]

[Text] An historical designation—Main Military Procuracy—has been restored through a 19 August 1994 order

of the Acting Russian Federation Procurator General to the Main Directorate for Supervision of the Execution of Laws in the Armed Forces.

The change of names is explained by the fact that the organs of the military procuracy are exercising supervision not only in the Armed Forces, but also in the RF Border Troops, Russian MVD [Ministry of Internal Affairs] internal troops, and the Federal Counterintelligence Service... In short, everywhere where the performance of military service has been prescribed by the RF Law "On Defense". As noted in the order, henceforth the GVP [Main Military Procuracy] will act as a structural subunit of the Russian Federation Procuracy General. State Advisor of Justice 2nd Class, Lieutenant-General of Justice Valentin Panichev has been appointed Main Military Procurator—Chairman of the GVP Collegium.

Reserve Officers Called Up

94UM0571A Moscow KRASNAYA ZVEZDA in Russian 25 Aug 94 p 1

[Article by KRASNAYA ZVEZDA Correspondent Feliks Semyanovskiy: "The Military Commissar Invites the Student—Thousands of Reserve Officers Are Being Called Up for Service"]

[Text] *This year reserve officers who are graduates of higher educational institutions are being selected for military service in accordance with the Russian Federation president's edict. What is this happening? MVO [Moscow Military District] Cadre Directorate Chief Major-General Valentin Kurnyshov helps the editorial staff find the answer.*

[Semyanovskiy] Valentin Sergeyevich, in your view, what caused the need to call up reserve officers precisely right now with the significant general reduction of the Armed Forces?

[Kurnyshov] That's a legitimate question. Actually, the Armed Forces are being significantly reduced and thousands of officers are being released into the reserve. But an acute shortage of officers has formed at the lowest command echelon, specifically, among commanders of platoons, gun and vehicle crews. For the time being, it is impossible to augment it with graduates of military schools although we are approaching their assignment in the most attentive manner. Of course, I am using data for the Moscow Military District but the problem, you yourself understand, is typical for the Armed Forces as a whole. Therefore, the need has arisen to once again call up reserve officers from graduates of VUZ's [higher educational institution] that have military departments. There is nothing unusual or extraordinary in this. Something similar was practiced in the former Soviet Army. And it is useful for reserve officers to actually test themselves in the role of subunit commanders and to obtain the experience of training and cultivating subordinates.

[Semyanovskiy] But isn't the past really repeating itself? Or does this work have some distinctive features at this stage?

[Kurnyshov] There are very many higher educational institutions on the territory of the oblasts where military district troops are deployed. With the help of the military commissariats, we have to call up more than 6,000 men from the walls of the VUZ's. Fifteen hundred have already been called up. Documents are being completed on another 2,500 reserve officers. But I must stress: only a small portion of these officers will serve in Moscow Military District units. We have also been tasked with organizational work for the call up into the Strategic Missile Troops, PVO [Air Defense] Troops, the Navy, Airborne and Border Troops, into the MVD [Ministry of Internal Affairs] internal troops...

At this stage, there is a special need in the troops for specialists for PVO units, and for artillery, communications, and motor vehicle officers...

[Semyanovskiy] Are VUZ graduates willingly entering the Army?

[Kurnyshov] Of course, there are problems. But they are first and foremost in the context of morale. Unfortunately, mass attacks on the Army in the mass media have left a mark on the consciousness of many people. The prestige of military service, including in officer positions, no matter how regrettable that is, has visibly declined. While familiarizing myself with the folders of those being called up for military service, I frequently read with chagrin and pain: "he does not want to serve".

We have also encountered the following cases. As is known, a reserve officer can be called up for military service only by a minister of defense order. We need some time, even just a little time, in order for that order to take effect. And some of those being called up, as they say, are resorting to running away, they are frequently driving to the countries of the near abroad. As they say, that's life. And behind this is the reflection of all of the complexity of our lives.

Geographic Breakdown of Retiree Housing Shortages

94UM0555A Moscow KRASNAYA ZVEZDA in Russian 17 Aug 94 p 1

[Article by Yuriy Gladkevich: "Officers Discharged to the Reserves Ask for Housing From Local Authorities as Charity"]

[Text] Barely started on the path of reform, the Russian Army is encountering very serious difficulties that are capable of complicating this process. Say what you will, there is not enough money for everything—for refitting the Armed Forces with more efficient models of combat equipment and weapons, for continuing the undoubtedly necessary scientific research and design work, even for ensuring the normal progress of combat training of

troops and naval forces. What is more, money is apparently not being found for implementation of tasks that were declared to be super-priority when it came to the Army, for social protection of the military. An obvious confirmation of that is the increasing numbers of officer, warrant officer, and petty officer families without apartments.

But if those still listed in the roles of units and formations are still hoping to get their own place, among many who already did their service or left the Army in connection with Army and Navy cuts, that hope is already fading with each day. And not without reason.

According to the data of January 1, 1994, in Russia 109 thousand service members discharged to the reserves or retirement were due to receive housing. As reported to KRASNAYA ZVEZDA by Lt-Col Yevegniy Kosenko of the Main Quarters and Utilities Directorate of the RF Ministry of Defense, as of July 1 of this year, just 2,434 persons had gotten a roof over their heads. It is not hard to calculate that at this rate of elimination of the housing shortage among those discharged from military service (provided that the line does not increase, but that is of course unrealistic—Yu.G.), the last homeless person in this line will get an apartment in just twenty-some years.

Reserve officers Kuliyev, Azarov, Shimarov, and Platonov (a total of 18 signatures) from the city of Shuya in the Ivanovo Oblast write to KRASNAYA ZVEZDA: "After giving Russia twenty or more years of service, we found ourselves homeless and unneeded by anyone. We know that the funds for construction of housing for those discharged to the reserve are allocated to the local authorities on a targeted basis, but they in fact are not providing us with housing. The 40 million rubles allotted last year from the federal budget were not used. There is every reason to assume that the 800 millions planned for this year will not be used either. And all our appeals to the city and the oblast authorities are met with responses like 'There are few of you, it makes no sense to build a separate building.' And sometimes even worse, 'You didn't spend your life working for Ivanovo oblast, so why are you asking?' So what did we spend our lives for?"

I have to say that this is not the first time that officers have complained about the obvious hostility of local authorities toward them. Here is another telegram from there, from Yuryevets: "Having waited for housing for more than three years, officers of the reserves, including soldier-internationalists, invalids of the Armed Forces, persons having the status of refugees cannot occupy a building that was financed on a targeted basis precisely for reserve service members. It was supposed to be 'finally' handed over back in September of last year, and in July of this year apartments were even distributed, but . . . Questions of heating, water, and gas services to the building were not resolved, and the finishing work was not done. The local administration cannot give any explanations, even to the military commissar." The author voiced the thought that the funds that are coming from the federal budget may have been diverted by the administration for other purposes.

It is hard to say what is in fact going on there. However there have indeed been incidents in certain cities and regions in which funds allocated from the federal budget for the construction of housing for individuals discharged from military service have been "lost." It is not ruled out that in Ivanovo oblast, which as we know is burdened with many serious socioeconomic problems, they too tend to fill the gaps in local budgets at the expense of former military.

But overall the problem evidently goes beyond the framework of purely local trickery and is directly associated with the extremely meager revenues for these purposes from the federal budget. Otherwise one can simply not explain the mass nature of the "indifferent behavior" of the Russian cities and regions toward the homeless living in them. This looks as follows, just in a few regions.

Supply of Housing to Service Members Discharged to the Reserve or Retirement

Name	Due housing as of Jan. 1, 1994 (persons)	Provided as of Jul. 1, 1994 (persons)
Moscow oblast	4,631	230
Leningrad oblast	2,416	60
Vashkortostan	1,360	57
Buryatiya	285	7
Udmurtiya	659	-
Chuvashiya	918	-
Krasnoyarsk kray	901	2
Ivanovo oblast	932	-
Kaliningrad oblast	2,701	-
Kostroma oblast	786	-
Kursk oblast	1,504	8
Nizhnegorod oblast	3,260	-
Orel oblast	1,267	-

Under these conditions, there is nothing for those discharged to the reserve to do but hope that the authorities—federal and local—will nonetheless have compassion, consider their years of military service to the Fatherland, and give the housing. But . . .

It is quite clear that the problem-solving mechanism in the form that it has developed is having problems. And in this regard, isn't it time to fundamentally revise it? It seems to me that there are only two possibilities here. The first is leave it as before, i.e. to finance from the federal budget through the locals, but in the process ensure uninterrupted flow of funds and the legal, material and administrative responsibility of the local leaders for their effective use. Second, to consider whether the local administrations are capable of resolving this task,

or should a different "resolver" be found? This could be either the Defense Ministry itself, which of course has an interest in the well-being of its recent cadres and is capable, as experience shows, of duly handling the appropriations. Or, as proposed by certain specialists, create a special state-commercial structure that would concentrate in its hands the funds allocated by the government and would carry out the construction of housing for discharged service members with them. But then, already-existing structures with the appropriate construction capabilities and specialists could also do that.

But be that as it may, a situation in which people who have honorably served the Fatherland for decades are forced to ask bureaucrats for an apartment as if they were asking for charity is no longer endurable. The prestige of military service has already dropped far enough without this. Today's young officers and boys intending to choose the soldier's profession see the sad end at which their older comrades have arrived, and it raises doubts about the rightness of their chosen career. It is not hard to assume that all this will certainly not promote the flow into the Russian Armed Forces of people capable of worthily replenishing its officer corps and comprising the basis of the strength of its Army and Navy.

BAM Region Railroad Commander Assesses Military Contribution

94UM0562A Moscow KRASNAYA ZVEZDA in Russian 19 Aug 94 p 2

[Interview with Lieutenant General Valeriy Vlasenko, commander of a corps of Railroad Troops on the BAM, by Colonel Valeriy Usoltsev, KRASNAYA ZVEZDA correspondent, place and date not given: "To the Storehouses of Russia's Outlying Areas"]

[Text]

The BAM [Baykal-Amur Mainline] Is Alive and Working

One who has traveled on the Baykal-Amur Mainline has had a chance to sense the greatness of the creation of human hands: Tunnels that are carved through mountain ranges, bridges that span rushing rivers, and the ribbon of rails that sparkles in the sun. It is no secret that soldier-railroaders took the most active part in the construction of the BAM. It is their subunit under the command of Senior Lieutenant V. Sobolev that laid the first meters of the BAM route in 1975. And nine years later, subordinates of Captain I. Savchenko and Senior Lieutenant V. Logushkin laid the "gold link" that terminated the eastern section of the mainline at the Station imeni Soldier-Railroader Hero of the Soviet Union V. Miroshnichenko.

What are the railroad troops on the BAM engaged in today? It is with this question on the eve of the 20th anniversary of the mainline that an interview began with Lieutenant General Valeriy Vlasenko, the commander of the corps of Railroad Troops deployed on the BAM.

The general takes a pointer and goes up to a Chegdomyn wall map on which the deployment locations of the corps subunits are highlighted.

"This area," the pointer outlines a circle of northern Fevralsk, "is rich not only in gold, but also in coal; moreover, of a high quality. According to data of geologists, the reserves are simply enormous. And there is a 60-meter layer so necessary to the region close to the earth's surface: The open-pit mining method will reduce its cost significantly. But, as you yourself realize, coal can be transported from here only by rail transport. Therefore, the corps has been assigned the task of extending a new branch from Fevralsk to Ogodzha. And this is 144 kilometers over a mountainous locality, larch forests with peat moss and permafrost, and the age-old taiga. And also numerous water obstacles, and the rivers here are unpredictable... It is very difficult to lay a double track under such conditions. It will also be necessary to build five way stations and numerous man-made structures—bridges, tunnels, and sluices."

[Usoltsev] And, nonetheless, something has already been done?

[Vlasenko] Unquestionably. Subordinates of Colonel Anatoliy Zhdan have already poured out about 40 kilometers of embankment for track laying. Thirty have been completed, and rodding has been laid for almost 20 kilometers. There is no denying that the battalions of Lieutenant Colonel Mikhail Yanchenko and Major Yevgeniy Buyko, and other battalions did wonderfully well.

[Usoltsev] However, Colonel Anatoliy Zhdan's brigade, as far as I know, is leaving Fevralsk and will now build railroads in the European part of the country...

[Vlasenko] That is so. But its redeployment does not mean that the introduction of the Fevralsk-Ogodzha branch will be stopped. Delays can arise only because of insufficient financing. As for the work on this BAM section, it is continuing; after all, we have already deployed two battalions here—mechanization and work gang battalions from another brigade. The brigade that is leaving Fevralsk has a good reputation, and not only because it built hundreds of kilometers of mainline and dozens of stations. All of the heat supply systems in Fevralsk are the work of the military railroaders. Last year, Colonel Zhdan's subordinates built a hospital complex of 350 beds for the local residents. Military railroaders are building other facilities as well in BAM cities and settlements and, of course, they are repairing tracks and station equipment. In a word, there is a lot of work on the BAM.

[Usoltsev] It is somehow out of place now to mention the "old": about the fact that the BAM is a road to the future...

[Vlasenko] Are not this same Ogodzha and other large deposits of fuel, polymetals, and other minerals our future? Well, we are unable at present to process them. But I am confident that the long-awaited economic stabilization will arrive, and then the mainline will work to the fullest capacity. We will have to lay new BAM branches. And this will be compulsory, because Russia is unable to do without minerals.

[Usoltsev] Your subordinates really do have a lot of work to do on the BAM. Where else are they working?

[Vlasenko] The personnel of the brigade where Colonel Aleksandr Kolomeychuk is the deputy is carrying out the electrification of the Khabarovsk-Bikin line section of the Transsiberian Railroad. They have already put the 60-kilometer stretch of the line section to Kruglikovo station into operation. Moreover, soldiers of the unit are engaged in expanding the railroad network of the eastern ocean gateway—the port of Nakhodka. They are also building new entry lines to the open-pit coal mines of Pavlovka and Primorye. Another brigade of railroad troops is engaged in the electrification of the Transsib on the Transbaykal line section.

It most likely should also be said that the reconstruction of the Komsomolsk-na-Amur streetcar network is also the handiwork of the military railroaders of our corps, which has been decorated with an Order. And literally the other day, in just three days, subordinates of Lieutenant Nikolay Savchenko made a major overhaul of the streetcar line from the center of Khabarovsk to the Northern microrayon, completing work in the sum of R150 million. The quality of the completed work is outstanding. Incidentally, civilian organizations charged fabulously high prices for such work. And they asked for work periods that were several times longer.

[Usoltsev] The work of military railroaders is difficult, they are frequently separated from families, and as a rule it is on the periphery. Are people really coming to you?

[Vlasenko] Imagine, they are coming; moreover, often with high qualifications, those who did not find employment for their knowledge and professional skills at civilian enterprises. For example, in the brigade deployed in Komsomolsk-na-Amur, about 40 percent of the positions are for machine operators, drivers, and some other specialties engaged at the moment under contract. We entrust to them the most responsible sections of work. Now, about what attracts people to our troops. First, good wages, various increments, the opportunity for relatively quicker access to housing that we ourselves build, and also the acquisition of specialities that are needed in "civilian industry."

[Usoltsev] Valeriy Vasilyevich, let us talk about such a problem as financing...

[Vlasenko] Unquestionably, we also have that problem. Customers have lent us huge sums. So that the families of military railroaders did not have to experience want in the extreme sense of the word, we ourselves find profitable solvent customers. This is partly why we started to repair streetcar lines, and earlier, did the construction of the hospital complex in Fevralsk, etc. Repairs of civilian equipment and the output of consumer commodities are being conducted by our repair enterprise headed by Lieutenant Colonel Ivan Arsentyev, which also brings in income. Practically all of the subunits of the corps have subsidiary plots.

[Usoltsev] I have heard that officers who grew up on the BAM also serve in your corps?

[Vlasenko] Not only graduates of military academies who left for training from our "land of mosquitoes and snowstorms," but also graduates of military schools who spent their childhood here during the construction of the BAM, return to the mainline. Like, for example, lieutenants Andrey Sheynov, Vladimir Komarov, Sergey Serdyuchenko, and Andrey Smotrin. Their fathers—the pioneers of the mainline—built Tynda and Alonkuch, Chegdomyn and Zvezdnyy, Urgal and other BAM settlements and cities. And the sons continued their work, and they are working on the development of the mainline.

...I was returning to Khabarovsk by train. And while admiring scenes of virginal nature from the coach window, I watched attentively, and not without satisfaction, how an oncoming freight train passed, and another... And trains heading in our direction that were carrying coal and timber were standing at stations. Of course, the Baykal-Amur mainline is alive. And it has been serving its people loyally and truthfully for dozens of years.

UKRAINE

Sevastopol Resolution on Base Status

94UM0570A Moscow KRASNAYA ZVEZDA in Russian 25 Aug 94 p 1

[Article by Captain 3rd Rank Vasiliy Dandykin, under the rubric: "From Sevastopol": "The Black Sea Fleet's Main Base Is Defining Its Legal Status"]

[Text] On August 23, a special session of the gorsoviet [city council] decided, by a majority vote, to recognize Sevastopol's legal status and confirmed the gorsoviet presidium decree on the Russian Black Sea Fleet's main base and adopted an appeal to the leadership of Ukraine and Russia.

In the appeal, the gorsoviet calls for a decision to be made on the city's Russian federal status and substantiates this through the will of the residents of Sevastopol and Black Sea Fleet seamen which they expressed in a recent poll, the impossibility of joint basing of the Ukrainian and Russian navies, the groundless introduction into the city of Ukrainian National Guard subunits and for a number of other reasons.

Radetskiy: Armed Forces Will Not Intervene in Sevastopol

94UM0570B Moscow KRASNAYA ZVEZDA in Russian 26 Aug 94 p 3

[Article by Grigoriy Nesmyanovich, Kiev: "Kiev Didn't Receive the Best Holiday Gift From Sevastopol"]

[Text] On August 24, the day of the celebration of the third anniversary of Ukrainian Independence, many political figures, along with congratulations and good wishes, had to give their fellow citizens an assessment of the "Sevastopol ChP [extraordinary event]" that took place on the eve of the holiday.

As is known, on August 23, the Sevastopol Gorsoviet made an unprecedented decision to change the city's status and its subordination. The range of assessments and opinions is not very broad on this score. And on the whole, we can reduce them to the opinion of Levko Lukyanenko, Ukrainian Republican Party chairman, former Ukrainian ambassador to Ukraine. He said that the Sevastopol Gorsoviet's actions are being viewed in Kiev as politically immature and adventuristic. And what occurred on the eve of Ukrainian Independence Day could ultimately result in a serious aggravation of the situation in the Crimea and in the country as a whole. Further, a well-known Ukrainian political scientist talked about the activation of a "fifth column" in the Crimea and about the need to severely punish the ringleaders, calling the Sevastopol Gorsoviet's decision an attempt to put pressure on the country's leadership by certain political forces on the eve of the meeting of the presidents of Russian and Ukraine. To the question, will the army participate in the resolution of the Crimean problem, Ukrainian Minister of Defense Vitaliy Radetskiy responded that the Armed Forces will not interfere. He stressed that the Army has carried out and will carry out the decisions of the Republic Supreme Soviet. As for the Sevastopol Gorsoviet's actions, they, in the minister's words, cause regret both in and of themselves and because this took place on the eve of Independence Day.

No holiday activities whatsoever took place on Independence Day in Sevastopol itself at a time when celebrations, rallies and festivals were occurring throughout the country.

Cadre Directorate Head Dyachuk on Citizenship, Service Obligations

94UM0530A Kiev NARODNA ARMIYA in Ukrainian 13 Jul 94 p 1

[Article by Lieutenant-General Hryhoriy Dyachuk, chief of the Cadre Main Directorate of the MO [Ministry of Defense] of Ukraine, under the rubric "Topical!": "Citizenship Again"]

[Text] A large number of appeals from servicemen regarding citizenship are coming into the Cadre Main Directorate of the Ministry of Defense of Ukraine.

Considering that this question has become problematical and affects many officers and warrant officers of the armed forces of Ukraine, I would like to provide some elaboration on this score on the pages of NARODNA ARMIYA.

The Law of Ukraine "Citizenship of Ukraine" grants the authority to resolve issues of Ukrainian citizenship to the President of Ukraine (with regard to all categories of citizens), internal-affairs bodies (with regard to citizens who reside permanently on the territory of Ukraine), and bodies of the Ministry of Foreign Affairs [MZS] (with regard to individuals who reside permanently outside the borders of Ukraine).

Individuals, including servicemen, who resided in Ukraine as of the moment that the Law of Ukraine "Citizenship of Ukraine" took effect (on 13 November 1991), were not citizens of other nations and did not object to the granting of Ukrainian citizenship, are citizens of Ukraine.

Servicemen who at that time were completing military service outside the borders of Ukraine, provided they were born or proved that they resided permanently on its territory and were not citizens of other nations, had to submit applications to the bodies so authorized before 13 November 1991 expressing their desire to become citizens of Ukraine.

It should be taken into account herein that an embassy of Ukraine was open within the CIS at that time only in the Russian Federation. The Law of Ukraine "Citizenship of Ukraine" did not extend sufficiently to the territory of

the state, the more so beyond its borders. The process of transferring servicemen to Ukraine began before the adoption of this law. Servicemen did not have the opportunity to resolve the question of citizenship of Ukraine through bodies of the MZS under the stipulated procedure.

The bodies of the MVS [Ministry of Internal Affairs] did not accept documents for determining the suitability for citizenship of servicemen who were in Ukraine in order to resolve the question of transfer to military formations of Ukraine, on the grounds that those servicemen were not registered and were not residing permanently on its territory.

The Cadre Main Directorate of the Ministry of Defense, simultaneously with the receipt of documents for transfer to military formations of Ukraine, passed along to servicemen the requirements of prevailing legislation pertaining to the completion of military service and its connection with citizenship. Officers and warrant officers expressed their desire to be citizens of Ukraine and complete military service in its armed forces therein.

The Cadre Main Directorate of the Ministry of Defense, in order to correct the situation that took shape surrounding the citizenship of servicemen who came to Ukraine after 13 November 1991, developed and coordinated with the department on issues of citizenship of the Administration of the President of Ukraine, as well as the appropriate bodies of the Ministry of Foreign Affairs and the Ministry of Internal Affairs, an information form that is expected to be issued to those servicemen in order to simplify the procedure for determining their suitability for Ukrainian citizenship.

Deputy Ministry of Defense Colonel-General I. Bizhan sent a sample of the form to the First Deputy Minister of Internal Affairs Colonel-General of Police V. Nedryhayla for incorporation into operations on 29 June 1994 in fulfillment of 148/82k.

The Ministry of Internal Affairs passed the information form, and the procedure for employing it to determine the suitability for citizenship, to the oblast bodies for internal affairs on 6 July 1994, according to information on hand at the Cadre Main Directorate of the Ministry of Defense.

The procedure set forth above for determining suitability for Ukrainian citizenship was passed along to the deputy ministers of defense, the commanders of the branches of the armed forces of Ukraine and the military districts, the chiefs of directorates of the central apparatus and the commanders of formations by Telegram No. 147/yug/14 of Deputy Minister of Defense Colonel-General I. Bizhan on 6 July 1994 in order to resolve this issue in as operative a manner as possible.

The Cadre Main Directorate of the Ministry of Defense of Ukraine, upon receipt of the lists indicated in the telegram of the Deputy Minister of Defense, will thus draw up and send to the military districts, branches of the armed forces and centrally subordinate military units a report on the date and motives for the appeal of the indicated servicemen to the Ministry of Defense of Ukraine.

Dyachuk on Resolution of Manpower, Qualification Problems

94UM0530B Kiev NARODNA ARMIYA in Ukrainian 27 Jul 94 pp 1-2

[Interview with Lieutenant-General Hryhoriy Dyachuk by Lieutenant-Colonel Valeriy Korol: "We Part Ways With Those Who Measure Love of the Fatherland in the Ease of the Russian Ruble..."]

[Text] *The Cadre Main Directorate of the Ministry of Defense [MO] of Ukraine and the editors of the newspaper NARODNA ARMIYA receive many letters whose authors are asking for help in solving certain cadre problems. They are all studied attentively, of course, and are resolved to the extent possible. The tasks of the directorate, however, are considerably broader. The discussion of our correspondent with the chief of the Cadre Main Directorate of the Ministry of Defense of Ukraine, Lieutenant-General Hryhoriy Dyachuk, thus began with a request to outline the issues with which the directorate is occupied.*

[Dyachuk] State policy in the realm of cadre work is formulated with the participation of the Cadre Main Directorate. More concretely, the directorate is called upon to support the acquisition of officers and warrant officers for the Armed Forces, and to organize their completion of service.

We prepare, together with the General Staff, computations of the requirements of the Armed Forces for officers and warrant officers, organize recruitment to military educational institutions, and plan the assignment of graduating officers. We organize the study and selection of cadre officers for assignment to posts by edicts of the president of Ukraine and the minister of defense of Ukraine. The Cadre Main Directorate exercises direct supervision and monitoring of cadre work in the Armed Forces. We have been entrusted with the preparation of draft official documents on questions of cadre work. These are documents that are put into force by the Supreme Soviet of Ukraine, edicts of the president of Ukraine, decrees of the Cabinet of Ministers of Ukraine and orders of the Ministry of Defense of Ukraine.

We are doing a great deal of work right among the troops. Suffice it to say that officers from the directorate assisted in the resolution of cadre issues on the scene for all of the general-arms corps, the Air Forces, the lower echelons of oblast military commissariats and the military educational institutions last month alone. We tried, as much as we could, to remove all of the painful issues that were addressed to us during our work with the troops.

One area of the work of the Cadre Main Directorate is work with reserve officers. Approximately 20,000 people are certified to the officer corps of the reserves each year. They are all assigned by us to wartime positions.

It should be pointed out that all of our work is connected directly with people. And we are doing everything we can to see that issues of the completion of military service are resolved on a legal basis.

Our directorate is constantly interacting with other structures of the Ministry of Defense and the General Staff, and in particular with the Main Directorate for Military Education. I would say candidly that I simply cannot imagine the work to provide cadre officers for the Armed Forces without that element.

The Minister of Defense of Ukraine acted as the direct organizer in setting up businesslike relations between our directorates. A whole series of expanded sessions of the Collegium of the Ministry of Defense and official councils was conducted at his initiative. This provided an opportunity for profound study of the problems of the emergence of military education in the Armed Forces, and determination of the areas of activity on this issue by the Ministry of Defense as a whole and each directorate in particular. We were able to define jointly the priorities in cadre work, and to direct some superior officers toward the problems of manpower acquisition for the branches of service and special troops subordinate to them. This year we also jointly resolved problems of the re-specialization of some aviation cadets to military specialties with shortfalls, including officers for the missile and artillery weaponry service, trucking and rear-support, and ensured the organized graduation and assignment of the graduating officers.

Today we are solving together the problem of recruiting officers and conscript youth to train at the military educational institutions of Ukraine, and rectifying mistakes that were once made. I consider the greatest of those to be the rushed decisions in the rebuilding of the system of military education in Ukraine that existed before, although it cannot be said that the conceptual framework for its reformation was mistaken as a whole.

Objective assessments will be able to be made only in 1999-2000, when we have the ultimate result—the graduates of the new system of military education. Only in the middle of 1993, after all, did we see the failures that had been programmed by military education into the training of cadre officers for certain specialties. The troops may not have received a single graduating officer in the motorized rifle, tank, aviation, communications or finance areas in 1996-98. Extensive elaborations of what that would signify for the Army are not required.

It cannot yet be said that the system of military education has been streamlined and provides an opportunity to resolve effectively the tasks entrusted to it today. Its further improvement is underway. The procedure for the subordination of the military educational institutions was defined last year by order of the Ministry of Defense. Today they are subordinate to the commanders of the branches of the Armed Forces, who bear full responsibility for their operations. The times demand it.

The question of training officers and providing the Armed Forces with them is being monitored, and we have sufficient controls to correct the situation depending on what is needed.

[Korol] Weren't actions taken too hastily with regard to the return of servicemen to Ukraine who were serving outside its borders? That, and even more the limitation on the deadline for the receipt of citizenship for military personnel, has doubtless added to the social tensions in the Army.

[Dyachuk] This is a complex issue. I do not want to give a premature evaluation of the actions of the legislative authorities. I would like to express some of my own thoughts nonetheless.

I feel that the process of the return of citizens to Ukraine should be considered from several aspects—political, economic, military and social. Our state announced the creation of its own Armed Forces, in which only citizens of Ukraine would serve. At the same time, with the collapse of the Union, a large number of our citizen-servicemen and the members of their families ended up outside the borders of Ukraine. Their transfer to Ukraine simultaneously with the short deadlines was simply impossible, owing to economic circumstances. We were able to reach the appropriate agreements with Russia and some other states on the transfer of servicemen. More than 27,000 servicemen who are citizens of Ukraine have been transferred as of today. Eighty percent of them have families of two or three people. That is close to 60,000 people in all. The average age of those people is 20 to 35 years old. They have higher education, as a rule. The main thing for us is that military specialists are returning to Ukraine whose training would cost billions. How can that not be a direct gain for Ukraine, with such a shortfall in the officer corps?

We are studying intently the individual cases of those who intend to continue their military service in Ukraine, and are trying to consider what lies behind their requests. We part ways with those who express their love of the Fatherland through the ease of Russian rubles. The latest examples are provided by the graduation of officers in Russia. We were working there in the winter with citizens of Ukraine at military educational institutions. Not all of them wrote requests to be transferred to Ukraine. That is understandable—the terms of the Russian contract are attractive. Eight officers graduating this year from the Frunze Academy changed their minds when they received their assignments to Transbaykal, Amur Oblast or other remote regions, or to places where there is shooting.

Another example. A graduate of the Vasylkiv School of the Air Forces, a Ukrainian with all of his roots in

Ukraine, wanted to serve in Russia. He thought about his Fatherland only when he ended up in Tajikistan, where blood was being spilled at the time. For that reason, taking advantage of the opportunity, I would like to return to the homeland those cadets who are studying today—help them make the correct choice, and keep them from making erroneous decisions.

I feel, with regard to the question of citizenship, that caring for one's own citizens, wherever they may be, is one of the priority areas of activity of any state.

The deadline for the resolution of issues of citizenship was set two years ago, without taking into account the specific circumstances of military service and the transfer of servicemen. We appealed to the government repeatedly to extend the deadline until the end of 1995. We were not heeded, however. The mechanism for resolving this issue was defined—everything proceeds through the embassy. The right to determine citizenship was granted to the Ministry of Foreign Affairs and the Ministry of Internal Affairs, with the receipt of the appropriate documents from the Ukrainian embassy in Moscow.

Whence I ask, can those servicemen, say, who were serving in the Far East, North or Transbaykal go to the Ukrainian embassy in Moscow to resolve the question of their citizenship? Of course not. A State Program for the Transfer of Servicemen was not devised either. There is still not one today. The resolution of all questions connected with this was placed on the shoulders of the Ministry of Defense. And there are now thousands of servicemen who transferred in 1992-93, are serving in the Armed Forces of Ukraine but have not gained the official status of citizen of Ukraine. The Ministry of Defense of Ukraine, in conjunction with the MVS, MZS and the department on issues of citizenship of the administration of the president of Ukraine, has thus devised a mechanism for determining and accepting the aforementioned individuals as citizens of Ukraine.

[Korol] You have already mentioned examples of interaction with the Main Directorate for Military Education. How is collaboration with other directorates developing?

[Dyachuk] No problems are arising therein. We are working together. The Cadre Main Directorate and the specific chief of a branch of the service can have differing approaches to resolving the provision of officers for the troops. The one is worried about the Armed Forces, and the other about his own subordinate formations and units or branch of the service. But there has not yet been a case where we have been unable to find common ground.

We are constantly informing the chiefs of the directorates of the central apparatus of the Ministry of Defense of the state of cadre affairs. The councils and meetings at which the fundamental issues of manpower acquisition for the troops are resolved are held with the participation of the chiefs themselves or their representatives. I would further state that we have been able to arrange good working relations with the cadre bodies and commands of the National Guard, Border Troops, Security Service, Civil Defense and the Ministry of Internal Affairs. And this is having positive consequences in our work as a whole.

We have sent approximately 200 graduating officers to those military formation this year, and sent roughly as many last year as well.

The Cadre Main Directorate, together with the directorates of the central apparatus of the MO of Ukraine and representatives of other power ministries and departments, were recently working on draft changes to the laws on Ukraine on military issues. This work is of a systematic nature, and is quite effective.

[Korol] The shortfall of cadres in the Armed Forces, both in quantity and in specialties, has not been able to be eliminated despite the large amount of work that has been done by the directorate?

[Dyachuk] The cadre policy of the leadership in the Armed Forces of the former Union did not take into account the interests of the republics, and did not provide for the proportional staffing of key leadership positions by national officers, especially in the operational-strategic bodies of military administration that were stationed in Ukraine. But the needs of the Armed Forces of Ukraine cannot be equated with the needs of the former military districts. We are thus still experiencing a considerable shortage of cadre officers with academy education.

That is first. Second, Ukraine has suffered a considerable decline in military-educational and scientific potential. Cadre officers in some specialties are trained only here. The misfortune is that we were not been able to make intelligent use of that two years ago. We were, at the same time, not training helicopter pilots, drivers, topographers, code personnel, or military lawyers. Not a single specialist in rear support, medical services or missile and artillery weaponry was trained in Ukraine. All of these specialists were graduated exclusively from military educational institutions in Russia.

Agreements exist between Ukraine and Russia according to which we are exchanging the graduating officers who are citizens of our states. Approximately 2,000 graduates came to us in 1992, including roughly 500 from the academies of Russia. That influx will become less and less as the years go by, however. Those values are cut in half for 1993. We are expecting about 500 young officers and more than 200 academy graduates this year.

We have found the way out of the critical situation. The forecasts for the manpower acquisition for the Armed Forces, allowing for cutbacks, have shown that we will have surplus officers in some specialties, first and foremost in the engineering and technical corps of the Air Forces, construction troops and engineers.

We foresee the re-specialization of graduating cadets who could become surplus into allied, scarce specialties, taking into account the requirements of the Armed Forces and the other military formations. People are understandingly moving to them.

Further, we have already begun training officers in scarce specialties at the military departments of the universities and institutes. Kiev State University is training officers for the financial service, lawyers, translators and topographers, and Kiev State Medical University for the medical service. Work is underway to create an institute for rear support and transport at the Dnipropetrovsk Air-Defense Missile School.

The problems of cadre training are always within the field of view of the Collegium of the Ministry of Defense. The minister of defense has decided to begin the training of officers for the operational-strategic and operational-tactical levels of training at the newly created Armed Forces Academy of Ukraine and the military educational institutions of the Ministry of Defense as of September 1 of this year. Problems in cadre training exist overall, but they are all under control. I feel that we will be able to resolve them.

[Korol] And how will the problem of the young officers, among whom the outflow, as they say, is the greatest, be resolved? How can that process be halted?

[Dyachuk] The problem of filling the primary positions in the Armed Forces is not a new one. It was acute in the former army of the Union. It remains no less acute for us as well.

There is now a considerable shortage of officers at the lower levels. These are the commanders of the platoons, companies, batteries and the chiefs of the stations. These people are the closest to the enlisted and NCO personnel. They directly organize and maintain military discipline among them. Analysis shows that there are more violations, more instances of nonregulation relations and crimes in those subunits where the officers are lacking. We are thus devoting particular attention to working with the young officers.

We have studied the causes of the discharge of young officers from the Armed Forces. The principal one is the low level of social protections for the servicemen. The preservation of the young officer cadre is one of the principal tasks of cadre work. Particular attention is being devoted to these problems.

Judge for yourself. The Ministry of Defense, in order to improve the social status of servicemen, has promulgated an order under which the leasing of housing is reimbursed. The Minister of Defense has resolved the question of the issue of food rations to officers, and monetary compensation up to 50 percent for the performance of duties in subunits where there is a shortfall of officers. The question of raising the pay of servicemen is under consideration. A positive resolution has been adopted with regard to the allocation of ten percent of the housing from the inventories of local authorities. The capabilities of the construction complex of the Ministry of Defense are being expanded, and 24,000 apartments a year are expected from it. All of this work is having positive consequences.

The discharges of young officers at their own request have decreased by more than half compared to the analogous period for 1993. We are studying intently the frame of mind of the graduating cadets this year, a considerable percentage of whom were convinced of the necessity of being discharged into the reserves after the completion of the military educational institution. Their rights and obligations were explained to them, they were persuaded of the haste of the decisions, and they were given the opportunity to try themselves on the path they had chosen four or five years ago. We converted to contract forms of acquiring the officer cadre of the Armed Forces in June. The graduating cadets were offered the chance to sign a contract to complete military service in positions in the officer corps. All of them signed contracts, with the exception of some people who were discharged into the reserves due to illness or pressing family circumstances. That is also an indication of our work with the young officers. I would like to emphasize here the imperfect nature of our legislative base on questions of the completion of military service. It is good that it is oriented toward the social protection of the person in epaulets. But there should also be a return to the state that has fed, clothed and spent money on training and that expected to receive an officer for the last four or five years. It is not normal when a graduate with a diploma from higher education tries to find himself a job in commercial structures or as a bodyguard for newly appeared businessmen. They pay much more, and the social problems are fewer. Our legislative base does not envisage any consequences whatsoever of an administrative-legal or financial nature in the event of a breach of contract by a young officer.

A mechanism was adopted in the FRG Bundestag, based on the decision of two graduates to curtail their army service ahead of schedule, for example, to reimburse the state for the expenditures on their education. Our proposals on this issue that we sent up in 1993 and the beginning of 1994 ran up against the slow mechanism for changing laws, as well as the possible indifference of some to these problems. Billions in state funds were thus thrown to the winds in 1993, but no one is disturbed about it. The appropriate actions were not taken. The legislative-standards base has actually been created and is in operation in all of the principal areas of cadre work. Time passes, however, and it requires suitable reactions to changes in society. The directorate is today, as I have already mentioned, working on draft changes to the laws of Ukraine on questions of the completion of military service. We will be submitting them in the near future to the judgment of the broad mass of servicemen, and will submit them again to the Cabinet of Ministers. And we are hoping for an understanding of our problems.

[Korol] Perhaps the lion's share of the appeals that come to the directorate are requests for transfer within Ukraine. What are the principles for the transfer of officers and warrant officers at their request?

[Dyachuk] We always try to resolve problem issues in the service of an officer or warrant officer in a positive manner. The requests of graduates with regard to place of service were taken into account as much as possible in their assignments this year, we met people halfway. We hope that this is a kind of stabilizing factor, and that the number of young officers who want to be discharged will decrease considerably. Servicemen, their parents or people's deputies appeal to us very often for the transfer of an officer or warrant officer closer to his relatives, as a rule owing to family circumstances. We study the question and meet them halfway as much as possible. The principle of the extra-territorial nature of manpower acquisition for our Armed Forces, however, has continued for a long time. And that is not because someone wants officers to scurry from garrison to garrison, being torn from their loved ones and suffer what some have called the "burdens and deprivations of military service." Not at all. There are a number of objective reasons here.

First, things have historically taken shape in such a way that almost all of the military educational institutions in Ukraine were (and today are) located in the eastern regions. Primarily those who lived close to the schools, that is, in the eastern regions, went to them. Second, the socio-demographic situation in Ukraine is such that most of the population is once again located in the eastern oblasts. Forces, however, are stationed with a regard for ensuring the defensive capabilities of the state, and the placement of the cadre officers is done proceeding namely from that factor. I would thus like everyone to look at this problem first and foremost from the standpoint of the state.

Military Educator Discusses Reform Progress, Problems

New Students at Educational Institutions Assessed

94UM0544A Kiev NARODNA ARMIYA in Ukrainian 6 Aug 94 p 1

[Interview with Training Methodology and Scientific Work Directorate Chief and Main Directorate for Military Education of the MO [Ministry of Defense] of Ukraine Deputy Chief Colonel Valentin Leonov by NARODNA ARMIYA correspondent Lieutenant-Colonel Serhiy Chornous: "Competition Exists Nonetheless. And What Competition!"]

[Text] *The entrance examinations have ended at the military educational institutions of Ukraine. Our correspondent asked Training Methodology and Scientific Work Directo- -e Chief and Main Directorate for Military Education of the MO [Ministry of Defense] of Ukraine Deputy Chief Colonel Valentin Leonov to comment on the first results of the selection campaign.*

[Leonov] I have been working for many years in the system of military education, but I have never seen such an influx of those wishing to enter the military educational institutions. I would point out, first of all, that there was no shortfall today. That disease plagued us for many years. We were forced to "transfer" students to Kharkiv from other educational institutions last year. The competition was now 1.2, and then went up to 1.5, people per slot at the Kharkiv Military University, where there is an exceptionally high recruitment of students. But that is the lowest value among the military educational institutions. I feel that the competition this year in general, as opposed to last year, was exceptionally high. It was four persons per spot, for instance, at the Odessa Ground Forces Institute. It was even greater at the military department of Kiev State University [KDU]. And there is a pilgrimage, one might say, of matriculants to certain fields at the KDU department. Even at the civilian educational institutions there was a larger influx only to such departments as legal and economic. There were not very many wishing to go to the others. The competition was thus considerably greater at military educational institutions than at civilian ones. I know this from more than statistical information alone. My son, incidentally, is studying in the electronics department at the Kiev Polytechnical Institute, in the field of automated planning systems. Several years ago only medalists were being accepted there. Today, in order to be a student in that department, it is enough to pass one, I emphasize one, examination in mathematics. The prestige of intellectual work, as we see, has been reduced to naught in our society.

[Chornous] So regardless of the fact that the prestige of the military profession is, to put it mildly, not the highest, that even President of Ukraine Leonid Kuchma is now embarrassed at the salary of a regimental commander, the youth are going to the educational institutions anyway...

[Leonov] They are going willingly. And that is no accident. More than 80 percent of the graduates of the civilian higher educational institutions cannot find work in their fields, at least to provide for themselves and their families, after they receive their diplomas. My son and his friends are are bustling about looking for work in their fields. The military educational institution, whatever it may be, can guarantee work.

I do not rule out the possibility that some youth who have become cadets at military educational institutions today are thinking that they will be able to say good-bye to the epaulets after getting their diplomas. That should not be. They should serve for the good of the Fatherland, for at least a few years. I think that the appropriate tough mechanism that would rule out the possibility of such not-quite-honest maneuvers by some young people will be instituted soon.

One should also not forget the material aspect of the matter. This is very essential today. I think that a cadet does pretty well for himself behind the walls of the institute—he gets clothing and shoes, he is fed, they look after his leisure time as well... And that while millions of families are at the brink of poverty...

The latter, I think, has also had an effect on the fact that more parents are deciding to sent their children to the military lyceums, of which there are still six in Ukraine. The ration of the lyceum student, after all, is the same as a fighter pilot. Experienced educators look after the youth there. They are tougher than some parents, they follow the evaluations of their pupils. The learning at military lyceums is better, more solid, than at the general schools, especially in foreign languages, mathematics, the natural sciences etc. The lyceum also takes the youth off the street, where the market and wild characters rule today. That is why there is also very high competition for the military lyceums today as well. So many youth expressed the desire to enter the Kiev military lyceum alone that we were not even able to give all of them the right to take the examination. There were more than four persons per spot at the Kiev lyceum by private files alone. And that is given the fact that the military commissariats were trying to restrain the influx of applications of those wishing to go to the military lyceum as much as possible.

There is but one conclusion—we were able to select the best prepared youth this year. And that is now a guarantee that the graduates in the future will have a good grounding of knowledge and good specialized training. Education, after all, is an eternal value that is always esteemed by the people. Life will sort everything out later.

Educational Institutions' Work Assessed

94UM0544B Kiev NARODNA ARMIYA in Ukrainian 10 Aug 94 p 2

[Interview with Training Methodology and Scientific Work Directorate Chief and Main Directorate for Military Education of the MO of Ukraine Deputy Chief Colonel Valentin Leonov by NARODNA ARMIYA correspondent Lieutenant-Colonel Serhiy Chornous under the rubric "Military Education: On the Path of Reforms": "Life Makes Corrections"]

[Text] *Many readers task that NARODNA ARMIYA tell them about newly created military educational institutions, as well as the revitalized, celebrated military schools. Our correspondent asked Training Methodology and Scientific Work Directorate Chief and Main Directorate for Military Education of the MO [Ministry of Defense] of Ukraine Deputy Chief Colonel Valentin Leonov to relate in detail the changes that have occurred recently in the system of military education; he also kindly agreed to answer questions submitted by readers.*

[Leonov] Some corrections have indeed been made in the structure of military education in accordance with the decisions of the Military Collegium of the MO of Ukraine. A number of the military educational institutions were subject to disbanding under Cabinet of Ministers Decree No. 490 of 1992. As time has shown, those higher educational institutions that remain have proved to be very overloaded. There were not enough teachers, classrooms, living space etc. to organize the educational process and the everyday life of the cadets. We had to make certain corrections.

While the draft of the aforementioned decree of the Cabinet of Ministers was being developed, the question of whether Ukraine would be a missile and space power had not yet come up. We thus did not envisage that specialists in that field would be needed. The decision has now been made to retain the Zhytomyr Higher School of PPO [Air-Defense] Electronics. The selection of new cadets has now been completed after an interruption of several years at this institution, and they will soon have mastered the unique "space" fields. The school has a good physical plant. Credit should be given to the leadership, professional and instructional staff and, first and foremost, the chief of the school, Colonel Dmytro Pyaskivskyy, who were able to preserve the plant, the cadre and the school itself under difficult circumstances. This is an institution with many traditions, after all, and was the only one in its branch of the service in the former Union. They have wanted to create a similar school in Kubinka, in the Moscow area, for many years, but it is not working out. We have proposed to the Russians that, for a certain fee, we would training highly qualified specialists for the Armed Forces of Russia in Zhytomyr. But Russians will not be studying in Zhytomyr, we were informed in a telegram from the Deputy Minister of Defense and Chief of the General Staff of the Armed Forces of Russia Colonel-General Kolesnikov. So much the better... We will be training specialists for the Armed Forces of Ukraine, working in the interests of the national space program.

A military institute for rear support and transport will also be created, based on the Dnipropetrovsk Higher Air-Defense Missile School, in accordance with a decision by the Military Collegium of the MO.

Another important decision has also been made. All of the artillerymen for the Armed Forces of Ukraine will henceforth be trained in Sumy, where a military department has been created at the state university based on the Sumy Higher Artillery Command School.

A military engineering department has been created at the agricultural institute at Kamyanets-Podolskyy. The Kamyanets-Podolskyy Engineering Command School will serve as the basis for the new military department.

Something similar has been undertaken in Simferopol. A military construction department has been organized there at the Crimean Institute of Environmental Protection and Resort Construction on the basis of the construction military-political school.

A military department at the Lviv Polytechnical University has been operating fruitfully for two years now at the Lviv Political School, where both reserve officers and cadre officers for the branches of the Armed Forces of Ukraine are trained. Four civilian departments are working in the interests of that department—the already mentioned Lviv Polytechnical, the famous Lviv State University, the conservatory and the Institute of Culture.

Substantial changes will also occur in the structures of educational institutions that are already in operation. A department for air-mobile troops has been created as part of the Odessa Ground Forces Institute [OISV]. The first recruitment was already conducted there this year.

[Chornous] Only assault troops are not trained in a class. The corresponding physical plant is needed. How has this question been resolved?

[Leonov] This is a difficult and painful issue. Such a "splendid" plant as exists at the Ryazan Higher Airborne Assault School, of course, does not exist in Odessa and probably never will. The situation, however, is not all that hopeless if you think about it. They train combined-arms officers at the OISV, who could easily change fields to be commanders of air-mobile subunits. We know this very well from the times when many of the graduates of the Kiev Combined-Armed Command School became hardened assault troops in just a few months. We will moreover be making active use of the physical plant of the Odessa Military District for the training of specialists for the air-mobile troops. Incidentally, the first division of air-mobile troops of Ukraine, whose base was the best in the former Union, is stationed not far away. Sorties could be made close to Mykolayev as well. A suitable base will soon be created, I feel, at the OISV as well.

There is another way out, too—retraining the officers, as well as training further the subunits of the air-mobile troops, at a specialized educational center.

[Chornous] You have in mind the Zhytomyr educational center for air-mobile troops?

[Leonov] Yes. As NARODNA ARMIYA has announced, because the Kiev Ground Forces Institute is very overburdened, the decision was made to transfer the department for the training of tank commanders to the Kharkiv Guards Higher Tank Command School. They have all the conditions there for the fruitful training of tank troops—a marvelous proving ground, which was created over decades, and experienced instructors. Come and learn, in short. As hundreds of cadets from the OISV will soon be doing.

Training of commanders for the communications troops will henceforth be conducted at the Poltava Higher Command School for Communications, which is affiliated with the Kiev Military Institute of Command, Control and Communications.

The General Staff also came to the Military Collegium with its own proposals. It was made known that the training of specialists for the radiological, chemical and biological defense troops at the Sevastopol VMI [Naval Institute] is not expedient, since that naval institution is not able to fulfill such an order. The decision was thus made to create a department for radiological, chemical and biological defense at the Kharkiv Military University. The chemical-protection specialists for the Ukrainian Navy will still be trained in Sevastopol.

No specialists at all are trained in Ukraine for the railroad troops. A great shortfall of officers is being felt. The decision of the Military Collegium of the MO to create a military department of railroad troops at the Dnipropetrovsk Technical University was thus a very timely one. The assets and resources of the Dnipropetrovsk PPO Higher Command Missile School will be utilized as fully as possible therein. The cadets will thus receive basic training at the university, which is able to train railroad personnel, while the specialized military training will be conducted in the military department and at the expense of the military agency.

We intend, in general—when our economy is experiencing a profound crisis and there is a catastrophic shortage of funds, including for the upkeep of the Armed Forces—to integrate with the civilian higher educational institutions as much as possible; this will permit a significant cutback in expenditures for the training of specialists for the Armed Forces of Ukraine.

[Chornous] Thank you for the interview.

CENTRAL ASIAN STATES

Commander Reviews Border Guards Concerns

944K2198A Almaty PANORAMA in Russian No 33, 20 Aug 94 p 7

[Article by Nikolay Drozd: "Border Troops of Kazakhstan Working To Effect Uniformity of CIS Legislation"]

[Text] On 16 August, a press conference was convened in Almaty by the commander of Kazakhstan Republic Border Troops, General Major Bolat Zakiyev. On 18 August the republic will mark the two-year anniversary of formation of its Border Troops.

General Zakiyev noted that border troops are an inalienable sign of the sovereignty of any state. Nonetheless, the republic was in no rush to transfer border forces to its jurisdiction, as was the case with respect to other structures of power. The applicable edict of President Nazarbayev was issued after the emergence of national border troops in Russia and other CIS countries.

In Bolat Zakiyev's opinion, contrary to reports appearing in certain Moscow mass media, the combat readiness of Kazakhstan's border troops not only has not diminished, it has in fact become enhanced. Thus, the

number of border violators detained in 1992 was 1.5 times greater than in 1990, and in 1993—1.8 times greater. Such a fundamental index as violation of border restrictions, General Zakiyev stated, has been reduced fourfold in the space of two years. Eleven new border control points have appeared along the border over this time frame, and the organizational structures for guarding the border have been reformed or established anew.

The departure of officers who often have no ties to Kazakhstan is inevitable, according to the general.

"It is not their fault, but rather our misfortune, and we have no intention of placing any artificial obstacles in their path," General Zakiyev stated.

The substantial difference in pay received by the border troops of Russia and Kazakhstan was cited as another important reason for the emigration of border guards.

"Although right now the number of officers in the border forces of each country is approximately the same," Bolat Zakiyev stated.

General Zakiyev stated further that just two or three years will be required for Kazakhstan to effect full personnel manning of border posts. The former border guards institute in Almaty, today a military institute, is capable of providing quality training of a significant number of officers. (The former Soviet Union had just three such institutions).

The main problems border troops face, General Zakiyev asserts, boil down to a poor material-technical base and shortage of trained cadres. Outposts today are not prepared for winter, in the general's words, due to financial problems.

The military is placing its hopes in a directive of the prime minister, according to which border troops are to be provided everything necessary to carry out their duties in the winter environment.

As far as narcotics contraband is concerned, General Major Zakiyev stated that one cannot term the contraband activity taking place along the Kazakhstan-China border as drug trade. It is quite modest in scale, and both sides have laws prohibiting the use and distribution of narcotics. In the general's words, "developed sales markets are not appearing." No instances of transit shipments of drugs have been uncovered.

With regard to integration of efforts of border troops within the CIS, the general called this successful. There exists, along with the council of border troops commanders of the CIS countries, a permanently functioning working organ endowed with the right of operational decisionmaking.

Kazakhstan has several multilateral and bilateral treaties enabling it to cooperate effectively with the border services of the CIS countries.

"Though it does not fall within our sphere of responsibility, we often initiate action to bring about uniformity in the legislation of CIS countries, particularly with regard to citizenship, entry, and exit," General Zakiyev stated.

Speaking on the subject of joint guarding of the Tajik-Afghanistan border, the commander of republic border troops emphasized the auxiliary role of Kazakhstan, the fact that Kazakhstan "is rendering assistance to the Russian Federation in supporting stability along this segment of the border."

CHECHNYA

Dudayev, Avturkhanov Cited on Chechen Issues

MM2208122194 Moscow PRAVDA in Russian 20 Aug 94 pp 1-2

[Article by Lyubov Pyatiletova: "The Chechen Factor"]

[Text] Moscow-Groznyy-Vladikavkaz—Journalists are converging on Vladikavkaz now from all ends of the earth. It is not the Ossetian-Ingush conflict that is drawing them. That continuing trouble spot perturbs few people today: After all, another trouble spot is heating up nearby and it has been assigned a purer role then that once played by the Baltic states for the USSR when part of the country was broken off at the edge. Chechnya is the center of the Caucasus region. It has not simply declared itself a sovereign state, it is, to judge by the actions of its present authorities, hostile toward Russia. The separatist forces of other republics are viewing as an experiment the events taking place there: Will it not be useful experience for them too? The whole world is also looking one. Having once feasted its eyes on the "direct broadcast" of the shooting of our "white House," it is awaiting a new spectacle: It will strike in Chechnya one day and perhaps this Russia, which resembles neither West nor East, will finally disintegrate into pieces.

Therefore the journalists have one destination—Chechnya. But aircraft have not flown to Groznyy for a long time. Flights to the nearest airfield, the Ingush airfield of "Sleptsovskaya," stopped 11 August. The ban was imposed by the Chechen Republic military council. The circumstances in which the order signed by M. Dudayev, deputy commander in chief of the Chechen Republic of Ichkeriya, was issued bear little resemblance to the legal actions of official authorities: A foreign automobile drove up to the airport at night and two stranger who were anxious to remain anonymous presented the duty officer with a package.... But we should not doubt the seriousness of the intentions of the authors of the order, a copy of which I obtained from Ingushetia Vice President B. Agapov: "If flights to the 'Sleptsovskaya' airfield continue, fighters will take off from the Chechen Republic of Ichkeriya to force them to land in Groznyy. In the event of failure to obey we do not guarantee the passengers' safety."

After this fact, which attests to the Dudayev government's encroachment on one more part of Russia, was made public, official Groznyy issued an explanation to the effect that the military council decision affects only military aircraft. But the airport in Ingushetia is closed to this day.

So that journalists now have to travel either via Kabardino-Balkaria or from North Ossetia to Ingushetia and only then to Groznyy. Each of the republics across which they travel and also Dagestan and Karachayevo-Cherkesiya is looking toward Chechnya today. And not out of idle curiosity but with alarm and even open fear. All peoples here are too closely linked together and history attests that the misfortune of one people, like an avalanche, drags after it all those who live nearby. The Chechen factor is already exerting tangible influence on the life of the entire region.

Despite the Russian leadership's assurances that it will resolve the problem only by peaceful means, G. Dzhigkayev, deputy head of the North Ossetia Government, appeared on the Republic's television recently and stated: "We fear that our territory could be a bridgehead for strong-arm methods of influencing Chechnya." That is not panic-mongering, it is simply that the memory of the tanks and batteries on the city and village streets during the Ossetian-Ingush conflict is too fresh here.

Actually, were it not for the tension from Chechnya, the overcoming of this conflict's consequences would probably have proceeded more successfully. For instance, take the problem of the return of the refugees and enforced exiles to their homes on the territory of North Ossetia. Despite the Russian president's edicts and the official agreement on this score signed by both sides, the Ossetians are obstinately resisting the return of the Ingush. Among the numerous reasons there is one which the authorities do not cite officially: Chechnya and Ingushetia were only recently a single republic. Not Chechnya has, albeit unofficially, left Russia. So there is a lurking suspicion that it may suddenly take Ingushetia with it.

North Ossetia is by no means indifferent to that—to this day Ingushetia has not abandoned hope that Prigorodnyy Rayon, which now belongs to Ossetia, will be returned to it. Meanwhile refugees are still living in caravans. The republic's president, Ruslan Aushev, has cause for alarm: "The people deported from North Ossetia will not survive a third winter in exile...."

Ingushetia and now Chechnya itself are no less afraid than the rest, which was not concealed during our meeting by R. Pliyev, head of the staff of the Republic's president. Recently, for instance, seven Ingush set off in search of a crane truck hijacked from one of them. Neighbors reported they had seen it in a yard next to the number 3 corrective labor colony, where all vehicles stolen in the district are usually rounded up. It is Chechnya territory. As soon as they appeared there they were arrested and the CHECHEN-PRESS agency reported the arrest of a terrorist group. Despite an official statement by the Ingush mission in Chechnya to the effect that they are no terrorists, these people are still in prison. There you have the brother Veinakhs, the "transparent borders" between related republics of which President Dudayev is so proud!

There are 30,000 Ingush living in Chechnya. If an armed conflict occurs there between groupings seeking power, they will not stand aloof. Here their numerous relations from Ingushetia and Dagestan, Karachayevo-Cherkesiya, and Kabardino-Balkaria will rush to help them—such is the tribal structure and such are the religious laws here. And the blood feud laws will also come into play here.... And the Caucasus will start to blaze.

But only the totally unarmed village of Assinovskaya, as staunch as a tin soldier, is openly opposing Chechnya, which is armed to the teeth. The village's Russian-speaking population is the last barrier preventing Dudayev's government from finally laying hands on Sunzhenskiy Rayon. The people of Assinovtsa have tried to hold a referendum and with its aid to leave the rayon undivided, belonging administratively, as before, to Ingushetia and forming part of Russia. The Chechens, who have already occupied all leading posts in the village and most of the rayon, prevented them. Then the village people tried to carry out a written poll among the population. They went round over half the houses in the village and ascertained that 80 percent of the inhabitants, irrespective of nationality, do not want to leave Russia. They did not manage to see the matter through—policemen confiscated the leaflets for signing and threatened reprisal. Even small children in the village know these are not idle threats.

The groans from Assinovtsa, Naurskiy, and other villages have roused the Terek Cossacks and brought them to the borders with Chechnya. It is true that there is little cause to count seriously on their protection. The cossacks themselves have a dyarchy: The council of elders has relieved Terek cossack army chief A. Starodubtsev of his post but he does not intend to lay down his powers. Valentin Sizov, appointed by the cossack elder until the Grand Assembly [Bolshoy krug], has nonetheless also taken up his duties. So that the provisional administration on part of the territory of North Ossetia and Ingushetia has deemed it best to persuade the cossacks to engage in their domestic disputes as far as possible from the border with Chechnya. If only to avoid acts of provocation, which were not long in coming. The entire Russian press reported the fact that in the villages of Galyugayevskaya and Stoderevskaya, Kurskiy Rayon, Stavropol Kray, cossacks, driving from their homes the Chechens living there, killed a 17-year-old boy. Recently it became known from a reliable source that the killers were members of Dudayev's armed formations disguised in cossack uniform.

Any of these sparks is enough to set light to the conflagration of civil war. Do the leaders of the now established resistance in Chechnya realize the tension in which they are keeping the entire North Caucasus? I put this question to Chechen Republic President Dzhokhar Dudayev and to Umar Avturkhanov, leader of the provisional council. Their replies are cited below. But you must judge for yourselves who to believe or whether to believe them at all.

Dzhokhar Dudayev:

I have no radical opposition. There are ordinary thieves, rogues, skinflints, and money-grubbers. For me these are ordinary criminals whom we have asked the Russian Government to hand over and it does not even answer. Labazanov was brought here in the past on instructions from Russian General Prosecutor Stepankov as one of 32 recidivists to unleash an orgy of banditry here. The Moscow special services and the so-called opposition members nurtured him, threw people to him, and virtually created the image of a national here as long as he destabilized the situation for us, although he had already been sentenced to death. Ruslan Khasbulatov was declared persona non grata in the republic back at the end of June. I shall not even lower myself to mention the names of other opposition members.

The Russian special services are causing us most harm of all. Through their acts of subversion alone they have caused us damage of something like 90 billion rubles at enterprises. The aim is to undermine our economy. Our economy is now in a good state and were we not being hampered we would show the whole world how to work. We have a deficit-free budget, production is growing, world-standard output is being produced, and orders are coming in from dozens of countries. And that despite the fact that the Russian Government, playing the Chechnya card, has forced us to survive in extreme conditions.

I am asked whether further talk with Russia is possible if it recognizes Chechnya's sovereignty. I wonder whether if the present leadership does this its recognition will have a legal basis. It was through the fault of these loud-mouthed politics-mongers who have come to power that a terrible blow was dealt to the USSR's entire state structure. In one hour millions of various peoples who used to be defended by the USSR Constitution and by law and right against outside aggression and against violence and murder within were disempowered. An enormous power was turned into a racketeering thug.

Look at what is happening to those who were recognized even at international level. Georgia has been recognized by 29 states yet a flourishing republic has been literally reduced to ruins. Armenia and Azerbaijan have been recognized yet to this day there is open genocide there. Tajikistan, Moldavia, and the Baltic states—they have all been awash with blood. Russia itself has also suffered. And we do not know where it will turn if matters continue like this.

Umar Avturkhanov:

There is a dyarchy in Chechnya. The power of the Dudayev regime is destroying our Republic, destroying Russia. The power of the provisional council is seeking to to everything to arrange political, economic, and cultural ties with Russia and with the neighboring republics and to comprehensively restore Chechnya. During this work we want to prepare all Chechnya's treaties for signing with Russia, just as Tatarstan has done.

The opposition control Nadterechnyy, Shalinskiy, Urus-Martanovskiy, and Achkhoy-Martanovskiy Rayons in full and they also control part of Sunzhenskiy and Groznenskiy Rayons. Virtually all Dudayev has left is the city of Groznyy. We urge the people to peace and we will do everything to ensure the Chechens do not start to kill Chechens. We also ask for patience and wisdom from the Terek cossacks, families of whom in Chechnya have experienced a great deal of grief in the past three years. Nonetheless we hope that this will not prompt the cossacks to acts of aggression against all Chechens. From Russia and its democratic forces we now expect most of all a correct assessment of the situation which has taken shape in our Republic and of the fact that it will not allow the rampaging of anti-Chechen sentiments.

Unfortunately, a very great deal has been done in our Republic recently to ensure that normal, natural relations between people are disrupted. After all, the Russians in Chechnya have exactly the same rights as any Chechen. We shall create conditions such that each person can feel for himself that this is indeed the case and those Russians who were obliged to drop everything and leave can return to their houses and apartments. During Dudayev's rule there has been just one Russian deputy in our parliament. In our government and our parliament people will be elected not on the basis of nationality but on the basis of their professional and personal qualities and I do not doubt that there will be many RUssians there. And most important, we shall not allow the infringement of the rights of our people who do not know the Chechen language. After all, we have all grown up—read, written, and communicated—in the Russian language. It should continue to remain the language of communication between all peoples.

They are trying to portray us as conspirators. But that is not so. For a long time the opposition openly demanded, at meetings, a referendum during which the Chechens could express their will: Do they need the institution of the presidency at all, does the people trust the president, the cabinet of ministers, and parliament? The regime did not organize a referendum just as it is not organizing open, free elections. Indeed, such elections are impossible in this situation, after all any newspaper in which there is so much as a word against Dudayev is banned immediately. Dissent has been declared illegal. What is that if not a dictatorship?

Chechnya: Military Hardware Left Behind Noted

94UM0550B Moscow KRASNAYA ZVEZDA in Russian 9 Aug 94 p 3

[Article by Anatoliy Borovkov and Petr Karapetyan: "Lermontov's 'Chechen With a Dagger' Today Also Has Tank and BMP"]

[Text] The mass media is carefully counting the military-technical potential of the Chechen Republic. The basic supplier of weapons is Russia, which after withdrawing our troops two years ago, allegedly left behind a "mountain of weapons and ammunition." Of course, no one considers that the military camps were blockaded, and the service members and their families were threatened with reprisals. Remember, the corpse of a commander of an automotive company, Vladimir Vashenko, who took part in the defense of his military camp from the attack of extremists, was found with multiple stab wounds and medieval humiliations in a swamp. In order to avoid bloodshed, some of the equipment and weapons of the Groznyy District Training Center (OUTs) had to be left behind.

According to data of the last chief of the center, Major-General Petr Sokolov, two years ago there remained in Chechnya: 42 tanks; 38 BMPs [infantry fighting vehicles]; 14 APCs [armored personnel carriers]; 14 BRDM [combat reconnaissance vehicles]; 37,758 assault rifles; 12,813 pistols; 460 rifles; 1,011 machineguns; 1,021 grenade launchers; 13,847 hand grenades, and 565 ATGMs [antitank guided missiles]. Chechnya has several L-29 planes and helicopters. The man on the street is increasingly arming himself: the cost of various types of small arms at any market in Chechnya is from 150 thousand to a million. If the funds allow, one can even acquire a BRDM.

It is hard to say how the weapons and equipment are distributed between Dudayev's guard and the opposition detachments. According to information received by KRASNAYA ZVEZDA, a relative balance is preserved here. But the weapons have already begun to speak: over the weekend three members of Dudayev's security service and four opposition members were killed.

The adjoining republics have halted the transit of goods through Chechnya. Around 2,000 rail cars with cargoes intended for Azerbaijan have accumulated on the Northern Caucasus railroad. The damage to Azerbaijan from mass thefts of its trains in Chechnya in just the last two weeks amounted to nearly 500 million rubles and 300,000 dollars.

On this same subject: Groznyy, August 8 (ITAR-TASS correspondent Sharip Asuev). "If the Chechen problem consists only of me, I am prepared to retire at any time" announced the President of the Chechen Republic Dzhokhar Dudayev in an exclusive interview with ITAR-TASS. "Let the Russian leadership and the world community publicly acknowledge the right of the Chechen people to freedom and independence, and the same day I will leave the president's chair and swear by the Koran that I will never be involved again in politics."

ARMS TRADE

Kuwaiti Purchase of BMP-3, MRL

94UM0554A Moscow KRASNAYA ZVEZDA in Russian 10 Aug 94 p 1

[News item: "Kuwait Purchases Heir of 'Katyusha'"]

[Text] The state company for export and import of weapons and military equipment, "Rosvooruzheniye," authorized by the Government of the Russian Federation, and the Ministry of Defense of Kuwait signed a contract on August 8 for delivery of a batch of BMP-3 infantry fighting vehicles and "Smerch" multiple rocket launchers.

Kuwait is the first country in the world to purchase the most modern "Smerch" multiple rocket launcher system, which is rightly considered the heir of the renowned Russian "kaytyusha."

DEFENSE INDUSTRY

Partial Arrears Payments to Key Industries

94UM0554B Moscow KRASNAYA ZVEZDA in Russian 10 Aug 94 p 1

[Article by Aleksey Tsvetkov: "Defense Orders Partially Paid for, but Conversion Picking Up Speed"]

[Text] Payment of wages delayed since February has begun at the largest enterprise of the defense complex in the Far East, the ship-building plant at Komsomolsk-na-Amure. The government has partially paid its debts for military orders.

"The state has settled only half of its bill with us," says the general director of the enterprise, Pavel Belyy. "Most of the money went to pay the wages and energy and shipping bills. The remaining money is enough to pay wages for four months, to buy metal and materials, and to continue work to master the production of civilian vessels." Pavel Belyy stressed especially that the enterprise is not renewing the construction of atomic submarines. A planned roll-back of defense orders is proceeding in accordance with the conversion program.

1000 Enterprises To Receive Conversion Credits

94UM0554C Moscow KRASNAYA ZVEZDA in Russian 17 Aug 94 p 1

[Article by Stanislav Telegin: "There Will Be Credits for Conversion"]

[Text] Recently a new package of orders of the RF president were signed that had to do with further development of economic reforms and normalization of financial activity. They were reported in a press conference for Russian and foreign journalists in the Government House of Russia by Deputy Economics Ministers Vladimir Kosov and Sergey Ignatyev, and Deputy Finance Minister Sergey Aleksasashenko.

These were primarily orders of the president to allot preferential credits for conversion of enterprises of the military-industrial complex and investments in the agro-industrial complex. Thus in the interests of conversion, around 1,000 enterprises of the military-industrial complex already producing both defense-related and civilian goods will receive credits.

DOCTRINAL ISSUES

Gareyev on Shape of Future Warfare

94UM0558A Moscow MEZHDUNARODNAYA ZHIZN in Russian No 4, 1994 pp 75-84

[Article by Makhmut Akhmetovich Gareyev, general of the Army, doctor of military and historical sciences, professor; conclusion. For beginning, see MEZHDUNARODNAYA ZHIZN, No 3, 1994: "The Outlines of Future Warfare"]

[Text] It was noted in the preceding article "War and Military Art in a Changing World" that the theory of nuclear war is growing obsolete, and that the leading states are laying increasingly greater emphasis on preparing their armies and navies for warfare using conventional weapons, though with regard for the constant threat of possible use of nuclear weapons. Given the greater destructive properties of modern weapons, and all the more so of weapons of the future, conventional warfare (not employing nuclear weapons) would also acquire a more destructive nature. Destruction of nuclear power plants, and chemical and other similar facilities presents a great danger.

The leading states will strive to develop and prepare armed forces with regard for ensuring their readiness to carry out missions in a large-scale war. This is because it is practically impossible to develop an army only in application to local wars and conflicts today, and then suddenly reorganize it for other missions tomorrow. In this connection the foundation for carrying out major missions will be laid right from the start.

At the same time it is fully obvious that today and in the immediate future, the danger of local wars and conflicts is the most probable. Consequently armies and navies must be prepared on priority for missions in local wars. The role of mobile forces is growing in this connection. But the job cannot be done with just these forces alone. Mobile forces (for example airborne troops) would be able to conduct independent combat activities only for a limited time, and they will need subsequent reinforcement. The United States possesses strong forward-based groupings supported by strategic aviation and naval forces, but even they will have to be reinforced.

When it comes to Russia, given its present geopolitical position, its broad expanses, the poorly equipped lines of

communication and the shortage of air, sea and land transportation, transferring mobile forces to threatened regions will require a significant amount of time. Considering all of this, and with the purpose of guaranteeing against all kinds of surprises, it would be suitable to have, in addition to mobile forces, the minimum necessary groupings of troops, aviation, and air defense forces and resources in the most important sectors. And even in local wars, mobile forces may not always be able to do the job alone. Experience shows that sometimes it is necessary to have rather large forces even for combat missions in local wars, as was the case in the Korean War of the 1950s or the Persian Gulf War in 1991.

Discussing changes in the nature of warfare, we also need to look in a new way at the relationship between the direct and indirect actions inherent to it.

The Chinese military thinker Sun-tzu asserted long ago that he who knows how to wage war is able to subjugate a foreign army without fighting; take foreign fortresses without besieging them; defeat foreign states without maintaining forces in the field for a long time. Even the wars in Western Europe in the 15th-18th centuries were more reminiscent of training maneuvers than military actions, because the rivals tried to avoid engagements that would lead to loss of expensive mercenary armies. But the situation changed with the advent of mass armies formed on the basis of universal military service.

Generalizing the experience of the Napoleonic Wars and the actions of the Russian Army, Clausewitz and Jomini came to the conclusion that fruitless maneuvers and capture of territory are not what determine the outcome of a war: Destruction of the opponent's armed forces is the strategic end goal of national war. Clausewitz demonstrated in his famous work "On War" that war possesses a single means—combat, or battle, that only great battles of a general nature produce great results.

"Destruction," he wrote, "of the enemy's armed forces lies at the basis of all military actions.... Bloody resolution of a crisis, the aspiration to destroy the enemy's armed forces is the first-born son of war."[1]

These principles, which were basically valid for their time, became dominant in the 19th-20th centuries. The successors of Clausewitz's teachings, especially von Moltke, von Schlieffen, Ludendorff, Foch, and later on Soviet military theoreticians as well, transformed his ideas regarding the decisive significance of combat and battle into an end unto itself, raising them to a theory of "absolute" or "total" war, relegating all other methods of attaining victory to a secondary role.

After World War II Liddell Hart was one of the first among military theoreticians to argue against the concept of total war in his book "Strategy of Indirect Actions." In particular, he wrote that adherence to the strategy of total war "is negation of the art of control of the state and of a reasonable strategy that tries to serve the goals of policy." The main idea of his book was the need for rejecting the principles of total war and for reviving the strategy of indirect actions in policy and in military art. He emphasized that "strategy will be most perfect when it ensures attainment of a goal without serious combat activities."[2] The notion that great flexibility of military art, that a combination of different kinds of activities is necessary, was also voiced by A. Svechin, a prominent Russian military theoretician.[3]

Liddell Hart did of course view the strategy of indirect actions too expansively, having in mind the following: avoiding decisive engagements and waiting for the enemy to make mistakes; rejecting frontal actions and making surprise attacks against the enemy's weak points from a direction of low probability; recognizing the decisive significance of maneuver in the theater of military operations; political measures to undermine the enemy's rear; utilizing stratagem, new means of warfare etc. Essentially all of the most important principles of military art and their competent use had to do with indirect actions, which were widely employed in the Second World War.

On the whole, despite a certain degree of exaggeration and expansive interpretation of the strategy of interactions, Liddell Hart's book encouraged a critical approach to the experience of the total wars of the 20th century, and a broader view on all of the diverse arsenal of political and military art accumulated by military history.

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Considering the altered conditions under which wars arise and proceed today, flexibility of military-political and strategic actions and use of more-diverse means of direct and indirect actions are becoming especially important and promising. In this case we need to assume that the relative importance of indirect actions will continue to grow even more. This will be promoted both by nuclear deterrence and by the desire to preserve professional armies as much as possible, to reject direct support of conflicts by great powers in opposition to each other. At the same time subversive actions against other countries are being assigned increasingly greater significance.

Back in 1954 Dzh. Kennan [transliteration] came to the conclusion that "the Soviet problem" cannot be solved purely by military resources, and he called for a search for more-flexible forms and methods of attaining the goals of the United States in the international arena. Ultimately it was these forms and methods of struggle against the Soviet Union and other countries of the Warsaw Pact that turned out to be decisive, in addition to the accompanying internal factors within these countries. Some specialists even suggest that the world is entering a period of wars of a new generation, directed not so much at directly destroying the opponent as undermining his military might from within.

Indirect actions may express themselves today chiefly as political efforts aimed at preventing wars and military

conflicts. Inasmuch as a large-scale war would most likely arise as a result of gradual involvement of states in military conflicts and their proliferation, anticipatory political and military actions aimed at preventing and containing them may have decisive significance to preventing war.

Besides political measures, in this stage economic sanctions, sea, air and land blockade of lines of communication, demonstrations of force, introduction of peacekeeping forces to separate the sides, and other means of action widely employed in recent times may have important significance.

If all of these measures fail to produce a positive result and military actions become unavoidable, it would be most important to ensure surprise by carefully concealing the principal means of one's actions, and to misinform the enemy.

Active military actions by ground troops may be preceded by massed attacks by aviation and naval forces with the goal of destroying the enemy by fire and breaking his will to resist. Following the fire strikes or in their course, a surrender ultimatum may be posed to the enemy, or certain compromises for resolution of the conflict may be proposed. The main groupings of ground troops, which usually suffer the largest losses, would best be committed to the bloody engagements promised by Clausewitz only after the enemy's main fire weapons and his most important objectives are dependably suppressed or destroyed.

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Some other new aspects are arising in the countenance of future warfare. What changes may occur, what will be the most important transformations in the future in the means of preparing and conducting war? If we attempt to characterize them in the most compact and general form, we could reduce the new phenomena anticipated to the following:

First, the most significant changes will have to do not only and not so much with the external indicators of warfare, which are usually the first to be addressed, although they will undergo considerable change as well. The main changes making future warfare dissimilar from its previous form ensue from its internal content, from the place where the actions of different combat arms and branches of troops carrying out an enormous quantity of highly complex, interrelated strategic and operational-tactical missions will be formed. In this case the actions of strategic resources and the ground, air, and sea combat and engagements will have a decisive influence upon the overall course of military activities not only in the vertical (from strategy to tactics and back) as in the past, but also in many other directions as well.

The principal objectives of defeating the enemy will be achieved not in the course of collisions between forward units, but rather by delivery of conventional fires from a distance. As a result all combat and engagements will acquire a dispersed, three-dimensional nature, embracing all spheres of military activity in front, in depth and in height. The intensity of fire effects upon all participants of war will grow dramatically, evoking unprecedented nervous and psychological loads, now possibly at the limit of endurance.

The novelty of future warfare will also ensue from the internal saturation, stress and dynamism of combat activities, and the high pitch of military confrontation of the sides.

Second, the influence of weapons, especially nuclear weapons, upon determination of political and strategic goals will grow. The role of conventional strategic weapons as means of deterring warfare that provide for indirect attainment of strategic results will grow.

Third, the spatial scope of warfare will increase. Weapons of the future and the greater combat possibilities of armed forces permit powerful strikes against the entire depth of the dispositions of the warring states and their military objectives, carrying out not only successive, as before, but also simultaneous destruction of the opponent's important groupings. While in the Second World War the USA and some of the warring countries of the British Commonwealth (India for example), or during the Persian Gulf War the bases of the multinational forces in Europe, on U.S. territory and on islands in the Indian Ocean, were outside the enemy's reach, in a future war with a well-equipped, strong opponent, all bases and facilities will be subjected to missile and air strikes, even in the most remote regions. And for practical purposes the concepts of "front" and "rear" will be rather arbitrary.

Fourth, the need for coordinating the efforts of all combat arms and branches of troops requires their joint use within a system of unified strategic operations. Participation of a large quantity of diverse weapons and equipment in warfare makes the engagement of the future exceptionally complex, creating new conditions for their use and interaction.

Rapid development of progressive technology will increase the military-technical gap between the leading states and other countries. Therefore military art must be designed not only for war between opponents that are approximately equal in technical respects, but also for war between opponents at different technical levels.

Fifth, of the three most important elements of combat and engagements—fire, attack and maneuver—the importance of delivery of conventional fires is increasing abruptly. Conventional fires must prepare more dependably for the attack, and increase the force of the attack, such that troops would not have to surmount the enemy at the price of large losses, as in the past. In this case the back-up echelons and reserves will be destroyed as a rule before they even reach the battlefield.

Decisive engagements will occur not only on land and at sea, but also in the air, and in general, operations and combat activities will assume an air-land nature, where fire and electronic strikes by ground and air forces against the entire depth of the enemy's disposition will be combined with numerous landings of aeromobile units and their penetration into the depths of enemy defenses in order to attack not only from the front and the flanks but also from different directions in the enemy's rear. On the whole, operations and combat activities will develop swiftly, without the presence of continuous fronts, or only in the presence of temporarily stabilized fronts; they will be highly fluid.

Great changes will occur in the nature of the initial period of war, in the means of preparing and conducting offensive and defensive operations, in the means of conducting encounter engagements, in the means of delivery of conventional fires and maneuver, and in the approach to creating the needed densities of men and equipment and concentrating the main efforts in the decisive sectors.

Swift and abrupt changes in the situation and introduction of automated command and control systems complicate and fundamentally transform the activities of commanders and staffs in managing troops and naval forces. A tendency for losses of personnel and combat equipment to increase can be discerned.

In addition to the material presented above, the literature devoted to the nature of future wars contains many conclusions that are clearly far-fetched, superficial and unviable. Thus, defense plans being drawn up by general staffs not only for nuclear but also conventional war are said to be meaningless. The sole reasonable approach today, it seems, is to recognize the impossibility of victory in any future war. In this case the failure to foresee destruction of their state is viewed as the greatest shortcoming of war plans and scenarios developed by general staffs. Military art in the future must adhere to "nonaggressive defense," and it must reject all offensive actions and attempts to occupy enemy territory.

An answer to the following question is not even attempted: How can the territory of one's country captured by an aggressor be liberated, and how can the country's sovereignty be restored without offensive, while remaining in defense? Regardless of what their authors intend, such conclusions are nothing more than an ideology of encouraging potential aggressors and capitulating before them, of depriving peace-loving states of their potential for deterring and preventing war. They have nothing in common with the interests of providing for either national or global security.

But in the real world, wars have been fought and are being fought today, victories are won and defeats occur, as was the case in the Persian Gulf in 1991, or as is the case today in the Caucasus and in the Balkans. Under these conditions, to think that if one of the sides rejects war there would be no war, and to assert that rejection of victory in war is the truest path to a safe world, means divorcing oneself completely from real life, and living in a world of daydreams and fantasies.

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Discussing the elements of continuity in the development of military art, we should emphasize that there are of course no general "permanent" and unchanging principles, but there are principles of military art (for example, surprise, massing of forces in the decisive sectors etc.), which by their essence have survived several millennia, and will obviously live even longer. But as military art develops, these universally recognized principles will be filled with new content and new meaning, and the forms and means of their implementation in preparation for and conduct of military activities will change.

Thus, it was stated in the well known book "Military Strategy" edited by V. Sokolovskiy that a large number of known principles, norms and rules that had formerly been considered to be paramount to military strategy are now being subjected to fundamental reexamination, or have lost their importance altogether. The authors included among them the principles of concentration of forces and resources in the decisive sector, economy of forces, and partial victory. They felt that strategic deployment, strategic offensive, strategic defense, strategic maneuver and other fundamental concepts of the theory of strategy have lost much of their importance. And yet, the fundamental principles are not losing their significance.

For example the principle of concentrating forces and resources in the decisive sector, which has existed since ancient times, must be implemented under the new conditions not by drawing together a large number of troops in a selected sector, but mainly by massing weapons.

This pertains also to strategic maneuver of forces and resources in the course of war. Not only are new weapons not replacing strategic reserves and the need for maneuvering them during war, but they are also raising their significance. However, in this case the questions of concentrating troops and naval forces, and carrying out measures to protect them from the enemy's mass destruction weapons, cannot be resolved by the old methods, and they must be resolved with regard for new requirements.

The outcome of war in the future will depend to a significantly greater degree than before on the quantity and effectiveness of efforts applied in the very beginning of the war; however, the strategic principle of economy of forces generally remains intact, inasmuch as in a war between large states with enormous potentials, it will be difficult to count on a fast war. Consequently we must also be ready for a relatively long, stubborn and fierce armed conflict.

One of the most important and difficult problems is foreseeing the possible nature of the aggressor's actions in the very beginning of the war, and developing the corresponding means of raising combat readiness and strategic deployment of armed forces. The book "Military Strategy" has this to say in this regard: "The existence of the idea, up until the Second World War, that strategic deployment of armed forces involves a complex of measures, implemented successively and according to a plan during a time of danger or with the beginning of war, to cover, finish mobilizing, concentrate and deploy armed forces in the theater of military operations, is now clearly obsolete. Today most of these measures may be carried out ahead of time, and they need only be concluded in the time of danger."[4] (Such views have recently been reviving.)

Such a recommendation does not in principle evoke any objections. When the possibility exists, this is something we should of course strive for. But while it is correct theoretically, in the practical aspect this recommendation does not account for the entire complexity of carrying out all the tasks. It's like the fire chief who tells his men to arrive at the fire an hour before it starts.

First of all, this approach does not take account of the fact that aggressive states usually place their main hope in war on a surprise attack, without preliminary deployment of all of the forces and resources necessary for this. Second, despite all of the advantages it offers in purely military respects, anticipatory strategic deployment of armed forces prior to a war is not always possible out of political considerations. Mobilization, not to mention the entire complex of measures of strategic deployment, has always been considered to be equivalent to a state of war, and it is very difficult to turn back from it to a peaceful status. It is no accident that Marshal B. M. Shaposhnikov called mobilization "the opium of war." If war is generally politics, then the political aspects will prevail even more at the eve of and beginning of a war.

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Considering all of this, the system of strategic deployment cannot be oriented solely upon one of the most advantageous variants; instead, it must be more flexible, and provide for organized deployment of troops (forces) no matter what the conditions under which aggressors initiate war.

Considering the above, the strategic organization of armed forces must provide for their swift reaction to any military conflicts and other aggressive actions. As a rule it must include: covering (forward-based) troops, mobile forces and reserves. In this system there is no need for committing large forces to the most important strategic sectors ahead of time, inasmuch as the main forces will be located at a certain depth, ready to quickly advance to the threatened sectors.

It must be assumed that the role of the initial period of war will increase even more in the future. It may be the main and decisive period, predetermining the outcome of the entire war in many ways. In contrast to the past, war need not necessarily begin with an invasion by land groupings. Moreover it may begin even before ground troops are fully concentrated and deployed in the TMO [theater of military operations].

The war may begin with a rather lengthy air operation or even campaign (consisting of a large number of air operations), in which air and naval forces first make massed bombing, missile and electronic strikes chiefly against aviation, missile troops and naval forces of the enemy, his air defense system, command and control posts, and industrial and other highly important objectives, and subsequently against the main ground troop groupings. Aviation and naval forces can carry out these missions from remote bases, and without having to first concentrate in the TMO. Airplanes and ships of the navy will travel only to within cruise missile launch range. Cruise missiles can automatically find and destroy targets at any depth in enemy territory. As a result the entire warring country may transform into a continuous battlefield. All of this will create conditions for attainment of great surprise.

Under the cover of massed attacks by aviation and naval forces, combined-arms (ground) major formations and combined units will be transferred and concentrated. Their offensive can begin only after devastating suppression of the enemy with the purpose of depriving him of the possibility for organized resistance. This means of action is also dictated by the fact that everything will be done to protect a very expensive regular professional army, which is highly sensitive to large losses. As a rule, an effort will be made to create favorable conditions for its use.

Some military experts making predictions about the development of the means of warfare suggest that in the future, use of ground troops and capture and occupation of enemy territory will no longer be needed in a number of cases. In cases where as a result of powerful air operations the enemy is soundly thrashed and surrenders, this variant cannot be excluded. But in most cases finishing a war without the use of ground troops is not very probable in a war against a strong opponent. A graphical example of this is the 1991 Persian Gulf War. Iraq formally surrendered, but because its territory was not occupied by ground troops, many of the military-political goals in behalf of which the USA and its allies began the war remained unreached. Only an invasion by ground troops supported by air and naval forces can secure the enemy's defeat and make his further resistance impossible.

Another problem is that in the course of a war with a strong and active opponent, it is difficult to count on winning the war only by means of air strikes. The defeat of large enemy groupings may require lengthy and intensive efforts, the conduct of a number of successive operations, and a combination of different means of

warfare. In this connection forms of strategic actions such as the strategic offensive and strategic defense will apparently not lose their significance in the future, though of course with regard for the new means of preparing for and conducting them.

After a war has been started, the policy of the most peace-loving state changes, it becomes subordinated to the interests of warfare and of defending the fatherland, which also presupposes the means of employing armed forces in a war under way. In order to repel aggression and defend its country from mortal danger, any army will act by the means made necessary in the particular situation, chiefly on the basis of operational-strategic expediency, and using the entire arsenal of military art. Consequently suggestions that have recently appeared in Russia regarding the need for legislatively determining, even before a war starts, the means of military actions to be used by the armed forces during a time of war appear simply naive.

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The interests of defense of a peace-loving country require teaching the troops to engage in both defensive and offensive actions, as is done in the armies of NATO, China and other countries; the idea of a first strike by such a country is excluded in this case.

In this case even when military doctrine is defensive in nature, orienting itself mainly on retaliatory, defensive actions at the beginning of a war, we cannot exclude a variant in which an immediate transition is made to retaliatory offense with the beginning of the enemy's aggression when a clear threat of aggression exists and reconnaissance is well organized and the decision for strategic deployment is made in advance.

However, it will also have to be considered that most probably a peace-loving country will first engage in defensive operations at the beginning of a war. Consequently in addition to improving offensive actions, more substantial preparation of command and control entities and troops for defensive operations is required today.

As we know, the Soviet Army paid dearly in 1941 and 1942 for underestimating defense. The experience of the Battle of Kursk persuasively demonstrated the correctness of defense on a strategic scale under certain conditions. What was new in the military art of this battle was that Soviet troops went over to defense not because they were forced to, and not due to a shortage of men and equipment, which were reasons considered to be appropriate according to existing theoretical views, but deliberately, with forces superior to those of the enemy. In this connection the notion is suggested in the literature (particularly by Marshal M. V. Zakharov) that "...the defense at Kursk cannot be viewed as a classical, typical case, as a model for imitation."[5] This is one example of a case where attempts were made to fit new phenomena born of the experience of war to formerly existing theoretical principles.

The fact is that it was believed for a long time in theory, and is still believed today, that repulsion of an enemy offensive requires two to three times less forces than those required for offense. However, the experience of the Second World War failed to confirm this principle. Not a single defensive operation was conducted during the war with significantly fewer forces than those of the attacking enemy. The enemy's offensive was halted in 1941-1942 only after a prolonged retreat of hundreds of kilometers, and after commitment of fresh reserves to the engagement. In the presence of powerful resources for delivering conventional fires and high maneuverability of troops and aviation, an attacker possessing the initiative has the possibility for creating a multiple, overwhelming superiority in selected sectors, and sufficiently large forces will be needed to parry his deep penetrations. Consequently as the experience of the war showed, a defensive operation intended for successful repulsion and defeat of a major enemy offensive would require forces and resources that are not much fewer than those required for offense.

Discussing the problems of offensive and defensive operations, we should consider that a tendency for further convergence of the means of actions of troops in offense and in defense is manifesting itself with increasing clarity. In this case the modern offensive is viewed as a combination of fire strikes and swift advance of tanks and armored infantry, supported by aviation and helicopter gunships from the air and daring actions of airborne troops within the defenses and on the flanks of enemy groupings. In contrast to the offensives of World War II, this will consist not of successive advance of troops from line to line, but of decisive simultaneous destruction of the enemy throughout the entire depth of his formation.

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Significant features are arising in combat activities in local wars and military conflicts. Sociopolitical aspects are acquiring the dominant significance in such wars. Sociopolitical measures aimed at settling a conflict, and gaining the support of the greater part of the population for them, must be dominant in resolution of conflicts, especially when movements of national liberation and civil wars are involved. Attempts by external forces to interfere in the internal affairs of other nations and states and to support only one of the opposing sides are usually hopeless. Conflicts can be resolved only by accounting for the interests of the warring sides and achieving their reconciliation.

The experience of wars in Vietnam, in the Near East, in Afghanistan, and recently in Yugoslavia, Somalia and other regions graphically demonstrates that use of military force in the absence of adequate measures aimed at resolution, and brutal bombing and repressive actions not only against armed formations but also against noncombatants would not only aggravate and widen conflicts and make them protracted, but also sometimes even make them unresolvable.

From a military point of view combat activities will be spotty in nature in the future in military conflicts. A distinct front line will not always exist, and the actions of troops will be complicated by intermingling of armed formations with the local population. Actions by enemy aviation will be possible from various directions, the most unexpected. Supply of troops and all forms of combat, material and technical support will sometimes have to proceed in the presence of disturbed lines of communication. Command, control and coordination of covering forces, mobile forces undergoing transfer, and ground groupings in which major air, air defense and naval formations participate in combat activities will require clear organization.

Positive processes associated with cessation of the cold war and of global confrontation are occurring in the complex modern world, creating the possibilities for peaceful political resolution of international problems. Mankind's interests do in fact demand cessation of all wars, and there is nothing more important and noble than fighting for this. However, the realities are such that many acute political, economic and interethnic conflicts still survive in the world, ones which can rarely be settled by peaceful means. Consequently we are unable to rid ourselves of wars yet, and it will obviously be a long time before an era of peace and tranquillity will settle upon our planet.

Under these conditions the main thing that is required today of the international community is a concerted effort at political prevention of wars, and when this is impossible, immediate actions to stop all aggression by military means. This will go a long way in deterring the desire to start wars and military conflicts. Dependable national military security of each state is also required. Economic and other considerations will of course have great significance, but the main thing is suitable and effective state defense, because as it has been said since long ago, **defense costs as much as a nation values its sovereignty.**

In order that the armed forces of peace-loving states could carry out defensive missions with the lowest sacrifices and with the highest effectiveness, we need to realistically evaluate the nature of warfare of the future and the prospects for development of military art without ultraradical passions and conservatism. Only under this condition can we create a situation where the command and staff at all levels, troops, and air and naval forces will be truly ready to do what is required of them on battlefields of the future.

Footnotes

1. Klauzevits, K., "O voyne" [On War], Moscow, 1936, pp 67, 70, 71, 75.

2. Gart, L., "Strategiya nepryamykh deystviy" [The Strategy of Indirect Actions], Moscow, 1957, p 470.

3. Svechin, A. A., "Strategiya" [Strategy], Moscow, 1927.

4. "Voyennaya strategiya" [Military Strategy], Moscow, 1963, p 22.

5. "Kurskaya bitva" [The Battle of Kursk], Moscow, 1970, p 454.

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